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THE COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF ANIMAL INDUSTRY

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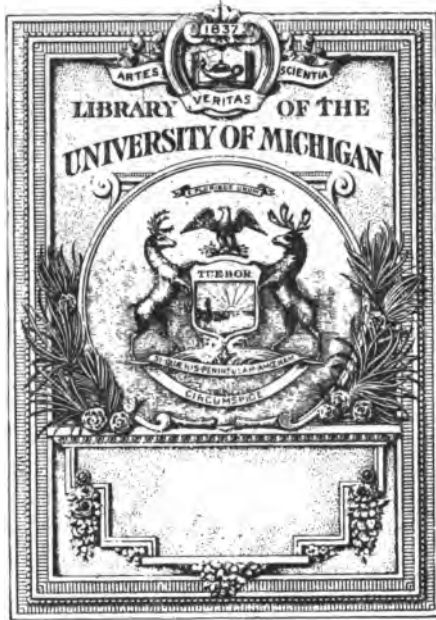
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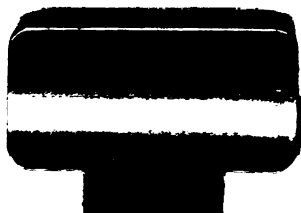
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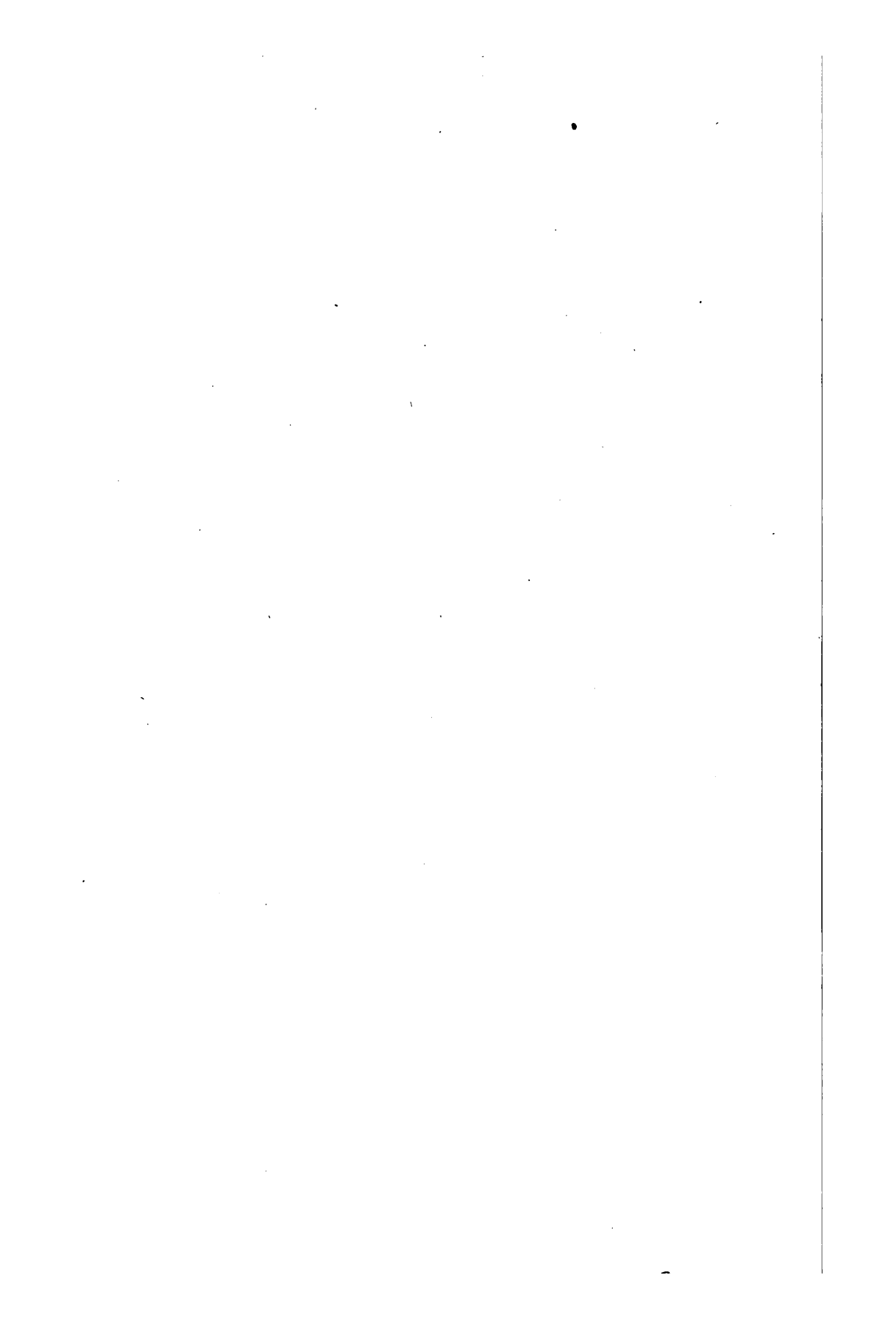
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EIGHTH ANNUAL REPORT  
OF THE  
COMMISSIONER OF ANIMAL INDUSTRY

FOR THE YEAR ENDING NOVEMBER 30, 1919



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**PUBLICATION OF THIS DOCUMENT  
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# The Commonwealth of Massachusetts

DEPARTMENT OF ANIMAL INDUSTRY,  
BOSTON, Nov. 30, 1919.

*To the Honorable Senate and House of Representatives.*

In accordance with the provisions of section 4, chapter 608, Acts of 1912, I have the honor, as Commissioner of Animal Industry, to present the following report of the Department's work for the year ending Nov. 30, 1919.

The Department of Animal Industry is charged with the duty of inspection and examination of animals within the Commonwealth; the quarantining and killing when necessary of animals affected with, or which have been exposed to, contagious disease; the burial or other disposal of their carcasses; the cleansing and disinfection of districts, buildings or places where contagion exists or has existed. It is also charged with the duty of tuberculin testing all neat cattle shipped from other States to Massachusetts, unless the same are intended for immediate slaughter or are accompanied by a record of test made by a veterinarian approved by the live-stock official of the State from which they are shipped and by officials of the United States Bureau of Animal Industry, and which record is accepted by the Commissioner on arrival of the animals.

7-1-19  
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The maintenance of health of the live stock of the State bears an important relation to the preservation of the public health, to proper fertilization of the soil, to successful dairying, to the conservation of all kinds of animal food used for human consumption, and to the business of propagating, feeding and marketing cattle, sheep and swine and also marketing their by-products, such as leather, wool, fats, fertilizers, and many other important articles of commerce.

Health of live stock is so indispensable to all of these projects that the prevention and limitation of contagious diseases among them becomes an important public work which not only directly affects the economic success of live-stock owners but more or less directly influences the welfare and material prosperity of

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every individual. Our work auxiliary to that of the State Department of Health in preservation of the public health lies in the suppression of such animal diseases as are communicable to the human subject, namely, glanders, tuberculosis, rabies, anthrax, actinomycosis, etc. Any one of these diseases may be transmitted to the human subject if circumstances favorable to such transmission are present; and as the majority of them are rapidly fatal to the human being, their prevention, control or eradication from the animal kingdom forms a most important part of our duties.

Fertility of the soil is so dependent upon the keeping of live stock that general crop production is found to be in direct ratio to the number of animals produced, raised and maintained upon the farms. Their numbers are in turn largely increased if the prevalence of contagious disease among them is effectively controlled or entirely eliminated. Healthy animals return to their owners a far better revenue on the investment of time, labor and capital expended in their upkeep than do those among which disease prevails in any form or in any degree of intensity or extent, and the difference in the revenue from the two classes is so great that there is no question as to the true economy of raising and maintaining only live stock which can be kept free from disease.

The dependence of the public upon domestic animals for food material as represented not only by dairy products but by the meat value of their carcasses if found healthy at time of slaughter indicates another necessity for the limitation of contagion among them as far as possible. The carcasses of many thousands of animals are annually condemned by Federal authorities in the abattoirs of the whole country on account of the presence of lesions of contagious disease to such an extent as to render them unfit for human consumption. The statistics for Massachusetts alone are not available, but they no doubt are of practically the same significance as are those of the country as a whole. It is an economic necessity of the nation that this great waste be reduced. Progress in this direction is yearly increasing through the active co-operation of Federal, State and municipal authorities and the veterinary profession in the effort for elimination of animal diseases. It is affected and influenced proportionately as it is encouraged by attention of the public

to prevailing conditions and the more general recognition of the necessity for this improvement. In this work toward reduction of the great waste of animal food products caused by the prevalence of contagious disease, and which work is necessarily of national scope, Massachusetts yields to no other State in its efforts in co-operation with every other agency operating to the same purpose.

In accordance with the provisions of chapter 189, General Acts of 1918, this report will consist of a brief summary of the year's work of the Department, illustrated by charts showing the control work of recent years of some of the principal contagious diseases of animals. These charts will probably be of considerable interest to those who have been familiar with the workings of this Department during a period of years. They show the progress of the control work during different periods, and summarize the success of such policies as have been pursued for a length of time sufficient to conclusively prove the wisdom of their inauguration.

Following is a gross summary of the work of the Department for the year ending Nov. 30, 1919: —

#### CATTLE.

- 13,163 Massachusetts cattle were physically examined by Department agents.
- 774 Massachusetts cattle were tuberculin tested by Department veterinarians.
- 10,993 Interstate cattle were tuberculin tested by Department veterinarians.
- 1,202 Animals on 148 farms in 47 towns were given preventive treatment against blackleg.
- 128 Animals on 8 farms in 5 towns were given preventive treatment against anthrax.
- 52 Animals on 8 farms in 7 towns were given preventive treatment against hemorrhagic septicemia.
- 2,097 Visits to unsanitary premises were made by district veterinarians.

#### HORSES.

- 303 Tests for glanders were made by Department veterinarians.
- 4,125 Interstate horses were examined by Department veterinarians.
- 7 Tests of whole stables were made by Department veterinarians.

#### DOGS.

- 391 Cases of possible rabies in dogs were investigated.

## SWINE.

68,075 Head of swine were treated in prevention and cure of hog cholera.  
16,180 Head of swine were treated in prevention and cure of hemorrhagic  
septicemia.

## MISCELLANEOUS DISEASES.

276 Cases of miscellaneous diseases were investigated by Department  
veterinarians.

## BOVINE TUBERCULOSIS.

Although the records of the Department show a favorable condition as to the prevalence of this disease in the State, we nevertheless feel that its control is a serious problem and that every additional effort possible should be made which promises any greater success in this direction.

Widely prevalent in all parts of the world, it is, however, in the densely populated areas of the country, where intensive dairying is carried on and where the conditions most favorable for its existence and spread among cattle and to the human subject are found, that its greatest prevalence is noted.

Statistics do not show that Massachusetts cattle are more generally affected than are those of other States in which similar conditions of environment exist. On the other hand, it is probable that if a correct survey could be made the percentage of cases in our herds would be found to be smaller than in many other States where active control work has not been given attention for as long a period as has been the case in Massachusetts.

The general policy which has been pursued by the Department in this work for the past three years is still in operation. This policy briefly stated is as follows: Tuberculin testing of all cattle arriving in Massachusetts from other States not accompanied by approved records of test, followed by slaughter of the reacting animals; annual examination by local inspectors of animals of all Massachusetts cattle and the premises on which they are kept, with a detailed report as to the health of the animals and the sanitary condition of the premises; quarantine of all animals suspected of being diseased, followed by an examination by a Department inspector not only of the suspected animal but of all other members of the herd in which it is found, with the slaughter of such as are found diseased; dis-

infection of the premises where diseased animals are found and a "follow-up" examination of the herd three months later; the same process of disinfection and re-examination of herd again carried out if additional cases are found; tuberculin testing of herds at request of the owners, under an agreement as to the disposal of the reacting animals.

In our opinion the present Massachusetts plan of searching out and disposing of clinical cases of tuberculosis, thereby removing the most active spreaders of the disease, is one of the most effective methods by which progress in its actual control is accomplished. The diagnostic value of the tuberculin test, carefully applied by competent men, is very generally recognized; it should be taken advantage of at every opportunity for the purpose of disclosing the non-clinical cases. Although not infallible even in the hands of most competent and careful veterinarians, satisfactory control of the prevalence of tuberculosis among our neat cattle is not possible without its aid.

Another factor now entering into the control of this disease is the movement inaugurated two years ago by the United States Department of Agriculture, and now in operation in forty-four States of the Union, known as the "accredited herd plan in eradication of tuberculosis." It provides for the application of the tuberculin test by the United States Bureau of Animal Industry in co-operation with live-stock officials of the several States. The movement at first limited the application of the test to herds of pure-bred animals, from which springs the foundation live stock of the country, but it has now been extended to include the herds of grade animals.

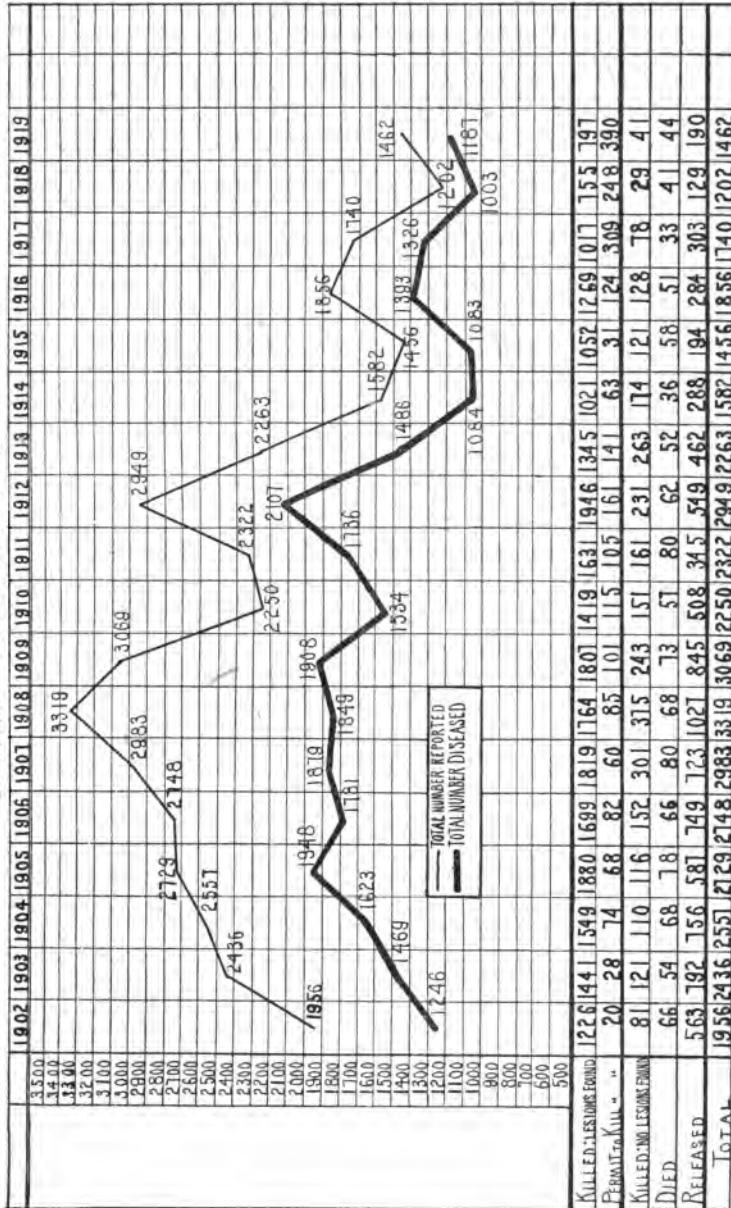
To such herd owners as agree to fulfill certain requirements laid down by the Federal and State officials relating to the control, keeping and replenishment of their herds, and whose cattle all pass two annual or three semiannual tuberculin tests, is accorded the privilege of having their herds listed in what is known as the "accredited tuberculosis-free herd list," published by the United States Department of Agriculture in a large edition and widely distributed.

The health of a herd and its freedom from tuberculosis being thus extensively advertised by the means of an official publication operates as a decided business advantage to the owner who

has animals for sale, establishing for them a materially advanced market value. This accredited list is also of great advantage to purchasers, and especially to those who, having eliminated tuberculosis from their own herds, prefer to purchase only such animals as come from herds which are officially certified as free from that disease.

Although Massachusetts owners have not yet applied for this test in any great number, indications are that the movement is surely gaining in popularity, and that this service by Federal and State officials, rendered at no expense to the cattle owner, will finally be generally taken advantage of, and as a measure in the eradication of tuberculosis from Massachusetts herds cannot but be ultimately of great value.

BOVINE TUBERCULOSIS



KILLED, TESTSOME FOUND	1246	1441	1549	1880	1819	1764	1807	1419	1631	1946	1345	1021	1052	1269	1017	755	797	
PERMITS TO KILL - "	20	28	74	68	82	60	85	101	115	105	161	141	63	31	124	309	248	390
KILLED, NO LESIONS FOUND	81	121	110	116	152	301	315	243	151	161	231	263	174	121	128	78	29	41
DIED	66	54	68	78	66	80	68	73	57	80	62	52	36	58	51	33	41	44
RELEASED	563	792	756	587	749	723	1027	845	508	345	549	462	288	194	284	303	129	190
TOTAL	1956	2436	2551	2129	2748	2983	3319	3069	2250	2322	2949	2263	1582	1456	1856	1740	1202	1462

The preceding chart has been made from Department records and covers a period of eighteen years. Reference to it shows an increase this year in the total number of animals killed and on post-mortem examination found to be affected with tuberculosis.

An analysis of this increase of 184 cases shows that 42 is the net increase in the number condemned as tuberculous on physical examination; 142 is the increase in the number destroyed on "permit to kill" warrants, divided and compared with the record of 1918, as follows: 57 reacted to tests made by Department veterinarians; 26 reacted to tests made by United States government inspectors; 29 reacted to tests made by private veterinarians; and 30 were killed on physical examination by Department inspectors.

The low record of tuberculosis cases shown in the years 1914 and 1915 is misleading, for the reason that on account of the prevalence of foot-and-mouth disease during those years examinations and inspections were necessarily suspended.

Following are various tables showing the extent of the work of the Department in connection with the control of bovine tuberculosis in Massachusetts for the year ending Nov. 30, 1919: —

*Massachusetts Cattle.*

Cattle reported as diseased in 1918 disposed of in 1919, . . . . .	17
Cattle reported as diseased during the year, . . . . .	1,478
	1,495

*Disposal of Above Animals.*

	Killed, Lesions found.	Killed, No Lesions found.	Permit to kill, Lesions found.	Permit to kill, No Lesions found.	Died.	Released.	Forward to 1920.	Totals.
Reported by inspectors, owners, etc., . . . . .	793	3	60	15	43	190	13	1,117
Reacted to Department tests, . . . . .	-	-	138	9	-	-	17	164
Reacted to private tests, . . . . .	4	-	121	7	1	-	3	136
Reacted to United States tests, . . . . .	-	-	71	7	-	-	-	78
Totals, . . . . .	797	3	390	38	44	190	33	1,495

The preceding table shows the disposal of Massachusetts cattle suspected of tuberculosis and reported from all different sources.

Following is a tabulation of tuberculin tests only, made by Department inspectors and reported by private veterinarians, showing also the disposal of such reactors as came under the jurisdiction of the Department and such as could be arranged for by consultation with owners: —

#### DEPARTMENT TESTS.

Premises on which tests were made, . . . . .	26
Number of animals tested, . . . . .	774
Number of reactors, . . . . .	213

#### *Disposal of Reactors.*

Killed, lesions found, . . . . .	106
Killed, no lesions found, . . . . .	9
Killed by owner, no killing order issued, . . . . .	4
Died, . . . . .	1
Awaiting action, . . . . .	93

NOTE. — In addition to above, 32 animals which reacted in 1918 were killed.

#### TESTS REPORTED BY PRIVATE VETERINARIANS.

Number of herds in which animals were reported, . . . . .	134
Number of animals tested, . . . . .	1,802
Number of reactors, . . . . .	562

#### *Disposal of Reactors.*

Slaughtered by owner, no record of post-mortem findings, . . . . .	221
Condemned on physical examination, . . . . .	4
Died, no post-mortem examination made, . . . . .	1
Killed, lesions found, . . . . .	120
Killed, no lesions found, . . . . .	7
Showing no physical symptoms of tuberculosis, no record of disposal, . . . . .	182
Awaiting action, . . . . .	27

NOTE. — In addition, 1 animal reacting to test made in 1918 was killed and lesions found.

During the year Department inspectors physically examined 1,252 herds of Massachusetts cattle comprising 13,163 head, of which number 991 were killed and found diseased.



*Interstate Cattle.*

The Department has for many years maintained quarantine stations at Brighton, Watertown and Somerville for the receipt of interstate cattle consigned for sale for dairy or breeding purposes. These cattle have been assembled at the Brighton Stockyards, where Department inspectors have applied the tuberculin test to such animals as had not been tested previous to shipment, and to those on which, having been previously tested, the record was not approved and accepted by the Commissioner.

On July 1, 1919, the Brighton Stockyards were taken over by the Bureau of Animal Industry, United States Department of Agriculture. As a measure in the movement toward eradication of bovine tuberculosis on the part of the Federal government, a new B. A. I. regulation applying to the interstate shipment of cattle went into effect on that date.

This regulation provides that all cattle for dairy or breeding purposes over six months of age moving from one State to another, unless to "public stockyards" (so designated by Bureau regulations), shall have passed a tuberculin test applied by veterinarians approved by both Federal and State authorities.

Realizing that many of the cattle shipped interstate to the quarantine stations mentioned above, for the weekly cattle market at Brighton, are from sections of New England where veterinarians are not readily available for testing, the Bureau officials decided, as a convenience to shippers, to declare the Department's testing station at Brighton "public stockyards" under the meaning of their regulations, and to which cattle may be shipped without having been tested, they being tested upon arrival under supervision of Federal inspectors.

Although the State's jurisdiction of the testing has been formally released to the United States government inspectors, we have agreed to co-operate with and assist them in doing the work without accepting any responsibility for condemnation of the reacting animals. The statistics of the work done appear, therefore, in separate tabulations, one covering our work singly as a State department, for the period of the year up to July 7, 1919, and another referring to that done in co-operation with the government officials.

The protection of Massachusetts cattle interests at this station, through which so many animals pass to the farms of the State, is being carefully attended to by our force of inspectors there present. We are at all times concerned that the State laws and regulations are complied with, and particularly that no interstate cattle affected with tuberculosis shall be released at this point for any purpose except immediate slaughter.

Following are tabulations showing in detail the interstate cattle work of the Department at Brighton and other points:—

AT BRIGHTON QUARANTINE STATION FROM DEC. 1, 1918, TO JULY 7, 1919.

Number held from 1918 for tuberculin retest in 1919, . . . . .	11	
Number accepted on approved records of test, . . . . .	404	
Number received and tuberculin tested, . . . . .	9,164	
		9,579

*Disposal of Above Animals.*

Number released on accepted records of test, . . . . .	404	
Number released on first test, . . . . .	8,754	
Number released on second test, . . . . .	131	
Number condemned, lesions of tuberculosis found, . . . . .	218	
Number condemned, lesions of tuberculosis not found, . . . . .	44	
Number slaughtered on "permit to kill" warrant, lesions found, . . . . .	19	
Number slaughtered on "permit to kill" warrant, lesions not found, . . . . .	5	
Number released for slaughter at owner's request, . . . . .	2	
Number died, . . . . .	1	
Number lost, . . . . .	1	
		9,579

AT OTHER POINTS FROM DEC. 1, 1918, TO NOV. 30, 1919.

Number condemned in 1918 awaiting slaughter in 1919, . . . . .	1	
Number held from 1918 for test or other disposal in 1919, . . . . .	210	
Number held from 1918 for retest or other disposal in 1919, . . . . .	13	
Number received during year, . . . . .	6,056	
		6,280

*Disposal of Above Animals.*

Number released on accepted records of test, . . . . .	4,401	
Number released on first test, . . . . .	1,716	
Number released on second test, . . . . .	24	
Number reacted and died, . . . . .	1	
Number reacted and held till 1920 for disposal, . . . . .	8	
Number condemned, lesions of tuberculosis found, . . . . .	47	

Number condemned, lesions of tuberculosis not found, . . . . .	9	
Number slaughtered on "permit to kill" warrant, lesions found, . . . . .	9	
Number slaughtered on "permit to kill" warrant, lesions not found, . . . . .	2	
Number condemned awaiting report of slaughter, . . . . .	2	
Number remaining in State temporarily, no test required, . . . . .	1	
Number of range cattle, held for test, but later slaughtered, . . . . .	23	
Number held awaiting test or other disposal, . . . . .	37	
		6,280

NOTE. — One hundred and one of the above tested cattle were young range animals from the West or Southwest, and were tested by United States government inspectors by the "intradermal method," in an "accredited herd" test, copy of record being furnished to this Department.

AT BRIGHTON QUARANTINE STATION, IN CO-OPERATION WITH UNITED STATES BUREAU OF ANIMAL INDUSTRY, FROM JULY 7, 1919, TO NOV. 30, 1919.

Number accepted on approved records of test, . . . . .	3,277	
Number received and tuberculin tested, . . . . .	3,000	
		6,277

*Disposal of Above Animals.*

Number released on accepted records of test, . . . . .	3,277	
Number released on first test, . . . . .	2,569	
Number released on second test, . . . . .	104	
Number reacted and slaughtered, lesions of tuberculosis found, . . . . .	213	
Number reacted and slaughtered, lesions of tuberculosis not found, . . . . .	114	
		6,277

SUMMARY.

Total interstate dairy cattle received at Brighton station, . . . . .	15,856	
Total interstate dairy cattle received at other points, . . . . .	6,280	
		22,136

*Origin of the above Interstate Cattle.*

Vermont, . . . . .	7,898	
Maine, . . . . .	6,393	
New Hampshire, . . . . .	5,990	
New York, . . . . .	1,099	
Connecticut, . . . . .	154	
Rhode Island, . . . . .	58	
Other States and Canada, . . . . .	544	
		22,136

Animals other than dairy cattle requiring tuberculin test received at other points than the quarantine stations may be classified as below: —

*Cattle not requiring Tuberculin Test.*

Cattle for immediate slaughter, . . . . .	2,139
Calves for immediate slaughter, . . . . .	2,743
Dairy calves under six months old, . . . . .	205
Cattle returned from out-of-State pastures, . . . . .	565
Feeder cattle, . . . . .	70
Died or lost, . . . . .	3
Returned from temporary stay in other States for breeding purposes, etc., . . . . .	25
Remaining in State for brief periods only, for breeding purposes, etc., . . . . .	11
Reshipped out of State soon after arrival, . . . . .	75
For temporary stay at sales or exhibitions, . . . . .	702
	<hr/>
Total, . . . . .	6,538

There are large slaughtering establishments at Haverhill, West Newbury and Springfield where Federal inspection of slaughtered animals is maintained, to which points cattle and calves for immediate slaughter may be shipped without special permit, record of which is not kept by this Department. There are on an average several thousand animals shipped to these points annually, and it is estimated that at least 90 to 95 per cent of them come into Massachusetts from other States.

Twenty permits allowing shipment of cattle into the State were brought over from the previous year, report on them not having been received before the close of that year. There were 1,302 permits issued during the year; on 14 of these no report has yet been received. It was found that cattle were brought in without permits in 158 instances, comprising 501 animals; 227 of these were accompanied by approved records of test; 125 were tested by Department veterinarians; 74 were Massachusetts cattle returned from pastures in other States; 27 were calves under six months old; 36 were slaughtered at once; and the remaining 12 were disposed of as requiring no test or were held for test at a later date. These figures are all included in the statistical tables.

During the spring and early summer Massachusetts veterinarians inspected and tagged in the vicinity of 800 head of cattle that were to be sent into other States for pasture. The larger part of these cattle went into the State of New Hampshire, under permit from the Commissioner of Agriculture of that State, and upon being returned to Massachusetts were checked up as far as possible by their tag numbers. Many of them were returned through the Brighton Stockyards.

At a sale of Ayrshire cattle held in Springfield in June, 101 animals came from other States, 9 of them being sold to remain in Massachusetts. On the occasion of the New England Fair held in Worcester during the first week of September, 139 head of cattle came from other States, 21 being sold to remain. At the Eastern States Exposition held in Springfield about the middle of September, and a sale of Aberdeen-Angus cattle held in connection therewith, 458 head were brought from outside the State, and 8 head of the Aberdeen-Angus breed were sold to remain in the State. At this exposition there were 56 exhibitors all told, a total of 685 head of cattle were shown, 357 swine and 98 sheep.

The Department keeps records of all animals received at the several quarantine stations, also the States from which neat cattle are shipped, as shown by the following figures:—

*Receipts of Stock at the Watertown Stockyards for the Year ending Nov. 30, 1919.*

New Hampshire cattle, . . . . .	4,392
Vermont cattle, . . . . .	7,073
Massachusetts cattle, . . . . .	84
Calves, . . . . .	21,636
Sheep and lambs, . . . . .	2,544
Swine, . . . . .	5,291

*Receipts of Stock at the New England Dressed Meat and Wool Company's Yards at Somerville for the Year ending Nov. 30, 1919.*

Maine cattle, . . . . .	3,261
New Hampshire cattle, . . . . .	2,456
Vermont cattle, . . . . .	11,416
Massachusetts cattle, . . . . .	849
Western cattle, . . . . .	3,374
Canada cattle, . . . . .	1,216

Calves, . . . . .	120,249
Sheep and lambs, . . . . .	204,859
Swine, . . . . .	1,286,700

*Receipts of Stock at Brighton for the Year ending Nov. 30, 1919.*

Maine cattle, . . . . .	10,085
New Hampshire cattle, . . . . .	10,981
Vermont cattle, . . . . .	3,475
Massachusetts cattle, . . . . .	14,027
New York cattle, . . . . .	19,712
Western cattle, . . . . .	31,615
Canada cattle, . . . . .	1,500
Calves, . . . . .	75,150
Sheep and lambs, . . . . .	7,180
Swine, . . . . .	39,810

#### GLANDERS.

This fatal disease of the equine species, and which is of great additional importance on account of its communicability to the human subject, formerly prevailed to such an extent in Massachusetts that its control was a subject of great concern not only to the officials of this Department and to public health authorities but also to owners of the several types of horses used for farm work, for general business purposes, for exhibition, breeding, or as a means of recreation and pleasure.

Although the horse is now supplanted to some extent by motor vehicles as a factor of business or pleasure, the demands of the great war for his service, — indispensable in many branches of army work, — and his priceless value as the only animal available for the manufacture of the many sera now used in the prevention and cure of diseases of other species of animals and especially of the human subject, point to the necessity for his continued production in large numbers and for his being kept free from contagious disease.

We are therefore actively engaged in the suppression of glanders in Massachusetts as the one principal disease of a contagious nature that affects horses, mules and asses. That we are meeting with success in this direction is shown by our records, which are tabulated and charted on pages 20 and 21 of this report.

The remarkable reduction in number of cases found this past year really indicates that complete extermination of this disease may be hoped for. During the year 1913 nearly 1,100 horses and mules were killed in Massachusetts on account of being affected with glanders. From that time to the present, as a result of improved methods in control work inaugurated that year and since improved and perfected, there has been a steady reduction in the prevalence of this disease to the small number of 23 cases, the record for 1919.

In the city of Boston alone, formerly the greatest center of this infection, the number of horses killed has dropped from 556 in the year 1913 to 4 in 1919. We are therefore apparently justified in predicting that in the near future this disease will be completely eradicated or so limited in prevalence that it will cease to be of great importance.

The successful methods of control heretofore mentioned have been pursued during the past year. They may be briefly referred to as comprising the following: —

Immediate quarantine of all reported cases; prompt killing of all clinical cases, followed by disinfection of the premises where kept, of the blacksmith shops where shod, and of watering troughs where they were in the habit of drinking; examination and re-examination of all contact animals, together with application of the several diagnostic tests when necessary; extension of the plan of testing whole stables; closing of public watering troughs in sections where an outbreak of the disease occurs; testing of all horses and mules shipped interstate from New York, New Jersey, Connecticut and Rhode Island, unless accompanied by satisfactory records of recent tests.

The Department's records for the year ending Nov. 30, 1919, show the following facts: —

At the end of 1918, 7 animals were under observation. Of this number, 1 has been killed as a positive case, and 6 have been released as free from the disease.

During the past year 194 suspected animals have been examined. Of this number, 22 animals proved to be positive cases and were destroyed in accordance with the requirements of the law; 9 died or were killed by owners before diagnosis had been made; 152 were released as free from the disease;

and 8 were still held under observation at the end of the year. Two animals were killed by order of the Department, post-mortem examination of which did not reveal the presence of the disease, and full appraised value of which was \$100. One animal was killed at owner's request, and no lesions of the disease were found.

#### HORSES REPORTED AS SUSPECTED.

Brought forward from the year 1918, . . . . .	7
Reported by renderer, . . . . .	1
Reported by inspectors, Department agents, veterinarians, owners, etc., . . . . .	138
Contact animals examined in stable tests, . . . . .	55
	— 201

#### *Disposal of Above Horses.*

Appraised and killed, positive, . . . . .	21
Killed by owner, reported by renderer, no award, positive, . . . . .	1
Died, positive, . . . . .	1
	— 23
Killed at owner's request, no lesions found, . . . . .	1
Appraised and killed, no lesions found, . . . . .	2
Killed by owners or died, no lesions found, . . . . .	9
Released as not affected with glanders, . . . . .	158
Awaiting disposition, . . . . .	8
	— 201

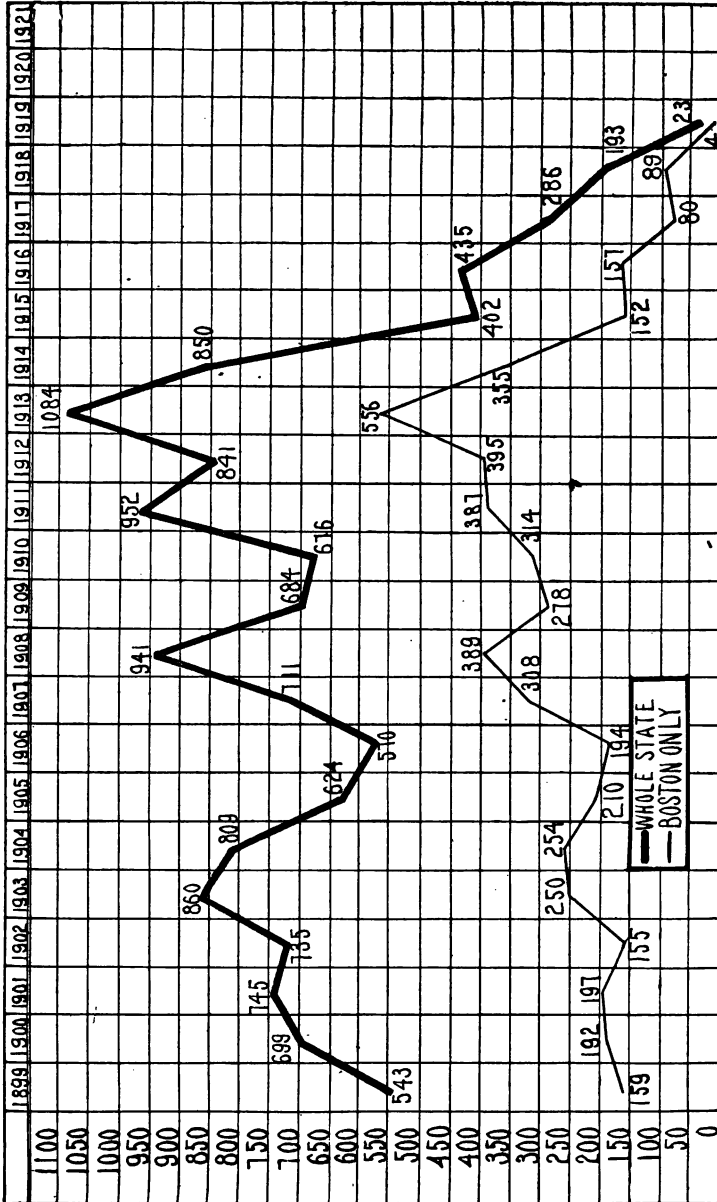
Following is a table giving the number of cases of this disease covering a period of twenty-one years. In this table cases which have occurred in the city of Boston are shown separately, on account of the fact that Boston was for many years the storm center of this disease. Special tabulation of the number of cases in that city has always been made in order that its relative importance to other sections of the State may be studied.



*Number of Cases.*

YEAR.	CASES.		
	In Boston.	In Other Places.	Totals.
1899, . . . . .	159	384	543
1900, . . . . .	192	507	699
1901, . . . . .	197	548	745
1902, . . . . .	155	580	735
1903, . . . . .	250	610	860
1904, . . . . .	254	555	809
1905, . . . . .	210	414	624
1906, . . . . .	194	376	570
1907, . . . . .	308	403	711
1908, . . . . .	389	552	941
1909, . . . . .	278	406	684
1910, . . . . .	314	362	676
1911, . . . . .	387	565	952
1912, . . . . .	395	446	841
1913, . . . . .	556	528	1,084
1914, . . . . .	355	495	850
1915, . . . . .	152	250	402
1916, . . . . .	157	278	435
1917, . . . . .	80	206	286
1918, . . . . .	89	104	193
1919, . . . . .	4	19	23

GLANDERS



The Massachusetts Society for the Prevention of Cruelty to Animals, the Boston Workhorse Relief Association, the Animal Rescue League, and the branches of these various associations in many cities and towns of the State have through their agents always been of material aid to the Department in the work of controlling this disease. Their close observation of working animals of all classes has in the past, when the disease was more prevalent, brought to light many showing suspicious symptoms, which they have promptly reported to this Department, and many of the animals so reported have proved to be positive cases of the disease.

The constant activity of the humane societies in removing disabled animals from work and destroying those which, on account of extreme age or poor condition, are no longer useful has undoubtedly been a factor in the suppression of glanders, as such animals are very susceptible to infection.

The maximum amount, fixed by chapter 646 of the Acts of 1913, which may be paid for any one animal condemned and destroyed on account of being affected with glanders being \$50, the appraised value of the animals condemned is a subject of considerable interest. Of the 23 positive cases of glanders occurring during the year, 21 were appraised at a total valuation of \$2,250, the average amount per animal being \$107.14. On the remaining 2 animals no appraisal was made for the following reasons: 1 of them was reported by a renderer and 1 died, the disease having been found on autopsy.

Of the 21 horses which were appraised, 18 have been paid for, the amount paid being \$900; in 1 case there was no award, as the horse had not been in the Commonwealth the required length of time; and 2 cases are awaiting the filing of claims for payment.

#### *Complement-fixation Test.*

Of the 7 horses under observation at the end of the year 1918, 3 were subjected to the complement-fixation test, with the result that they were released as probably free from the disease.

One hundred and twenty-five samples of blood were taken from 101 horses during the year 1919, and the following disposal of the animals was made:—

Animals held over from 1918, disposed of as above, . . . . .	3
Animals released on first test, . . . . .	63
Released on second test, . . . . .	12
Died or killed by owner after first test, . . . . .	3
Died or killed by owner after second test, . . . . .	1
Condemned on first test, . . . . .	9
Condemned on second test, . . . . .	1
Condemned on third test, . . . . .	1
Held for further observation, . . . . .	8

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 101

#### *Ophthalmic-mallein Test.*

This test has been applied to 152 State and 653 interstate horses during the year. It happens that the test in some instances was repeated on the same animals, and 831 such tests have been made. The results are as follows:—

Tests giving positive reaction, . . . . .	17
Tests giving no reaction, . . . . .	793
Tests giving unsatisfactory results, . . . . .	21

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 831

In the so-called “stable tests,” or tests of all animals in stables where glanders has been found, 55 horses have been tested in 7 stables, and among them 1 case of glanders has been found.

#### *Interstate Horses.*

Horses, asses and mules shipped to Massachusetts from the States of New York, New Jersey, Connecticut and Rhode Island must be accompanied by a permit from the Commissioner of Animal Industry. This regulation was established on account of the prevalence of glanders among the horses of the States mentioned, and in order that upon arrival the animals might be immediately located and examined by agents of this Department.

The number of horses, mules and asses shipped from these States has decreased from 4,425 in the year 1918 to 4,168 in the year ending Nov. 30, 1919, the statistics following:—

EQUINE ANIMALS FROM NEW YORK, NEW JERSEY, CONNECTICUT AND  
RHODE ISLAND.

Mules, . . . . .	11	
Horses, . . . . .	4,157	
		————— 4,168

*Disposal of Above Animals.*

Released upon physical examination, . . . . .	3,452	
Released upon accompanying papers without examination, . . . . .	43	
Released after test, . . . . .	673	
		————— 4,168

It is worthy of notice that no interstate horses or mules were condemned this year as affected with glanders. Many of the animals brought from the above-mentioned States are of the better class, being highly bred horses used for carriage work and breeding purposes. The second-hand horses, which are trafficked in and sent from the markets of one State to those of another for purpose of public sale, have been specially watched on account of their being considered more liable to be subjects of contagious disease than the higher class animals, and if not accompanied by a satisfactory certificate of test have been tested on arrival by inspectors of the Department.

RABIES.

The control and eradication of this disease is one of the most important duties of the Department because of its communicability to man from the lower animals, its rapid spread if uncontrolled, especially among dogs, and the extremely high rate of mortality which in all species follows its development. An outbreak in any locality, if it becomes at all extensive, is apt also to create more or less panic, especially if persons are bitten by any of the animals positively known at the time to be rabid, or which are subsequently proved to have been infected when the bite was inflicted.

The measures necessarily taken to effect the control of an outbreak are also accompanied by much inconvenience, trouble and expense on the part of the public. In addition to the monetary loss caused by the death of valuable dogs and other animals found to be positive cases of the disease, the expense

of confinement and restraint of those exposed to it but found later not to have been infected is not inconsiderable.

Our records show a gradually increasing prevalence of rabies during the past three years, which in our opinion is principally due to new centers of the contagion being established here by infected dogs coming from neighboring States where the disease has raged extensively during that period. Its extension to Massachusetts has been felt to be inevitable owing to the facility by which it can be spread by roaming dogs. Many of these animals ordinarily kept under proper conditions may have become infected unbeknown to their owners, and, obeying what is commonly an early inclination in the development of the disease, may wander far away from home within a few hours even, and spread contagion widely before searched for by their owners. Such dogs are often never found by their owners.

The ownerless or tramp dog is, however, a more important factor in spreading this contagion because no one pays any attention to his physical condition or his whereabouts, and in many localities no attempt is made to enforce the laws relating to him. He roams unrestricted and is a menace to the community in many ways.

Had it not been for the very thorough and efficient control work carried on by the authorities of the neighboring State of Connecticut, where rabies has extensively prevailed for the past three years and where several thousands of unlicensed dogs have been destroyed during that period, we would undoubtedly have been confronted with a much more serious condition than now exists.

Our local inspectors of animals are familiar with the situation, and those of border towns have been specially advised as to the value of early quarantine, thorough investigation and prompt reports in detail to the Department's office. If we can procure the co-operation of town and city officials, dog owners and the general public, an outbreak of rabies in any community can generally be suppressed before it becomes serious. Without question, a better enforcement of our dog laws would materially assist in preventing the further spread of this contagion and operate to reduce its present prevalence in several communities.

Following is a general outline of the Department's present methods in rabies control work:—

Upon report being made to the Department that a person has been bitten by a dog, the inspector of animals of the town or city in which it occurs is ordered to make an examination of the animal, and, even if it appears to be healthy, to have it restrained for a period of fourteen days for the purpose of observation. The restraint for this length of time is deemed necessary for the reason that competent authorities have shown that in some instances the bite of a dog infected with rabies may communicate the infection fourteen days before the animal shows clinical symptoms. If at the end of this period no symptoms of rabies have developed, the animal may be released. In case a person is bitten by a dog which, upon examination by the inspector of animals or any other person, shows evidence of already being affected with rabies, or there is a history of its having been in contact with a rabid animal, the dog in either case is immediately confined in strict quarantine. If it is subsequently killed or dies, its head is at once sent to the Department's office, and a laboratory examination of the brain is made for the purpose of positively determining whether or not the animal was affected with the disease. Information as to the laboratory findings is promptly communicated to the person or persons who have been bitten. The State Department of Health is given the information received in every case of dog bite reported to this office, whether the bite has been inflicted by an animal suspected of rabies or not. We also order the local inspector of animals not only to ascertain the names of all persons who have been bitten by dogs suspected of rabies but to find out if animals have also been bitten, and if so to place the same in quarantine for a period of at least ninety days. All dogs which are found to have been in contact with a rabid animal, whether or not it appears that they have been bitten by it, are also placed in quarantine for the same period.

If an unusual number of cases of rabies is found to exist in any town or city, the selectmen or the mayor or board of aldermen are asked to issue a restraining order, under the provisions of section 158 of chapter 102 of the Revised Laws. Such an order obliges all dog owners to confine their animals to their

own premises for a certain period, or take them therefrom only on leash. This restraining order is much more effective in the local control of an outbreak than is an order which compels owners to muzzle the animals only but not restrain them, as a muzzled animal let loose may in some way get the muzzle off and bite other animals or people. A muzzled dog at large may therefore become much more dangerous than an unmuzzled one which is at all times confined upon owner's premises or taken therefrom only on leash. Dogs found running at large while a restraining order issued by town or city authorities is in force may be killed on the issuance of a warrant for the same to a police officer. It was found advisable to ask for general restraining orders in five towns of the Commonwealth during the past year. These orders were for periods of ninety days.

Our force of district agents, all of whom are veterinarians and located in different parts of the State, together with the local inspectors of animals, of whom there is one or more in every city and town of the State, constitutes an organization by which systematic local control of an outbreak of this disease can generally be accomplished within a reasonably short time.

During the year ending Nov. 30, 1919, 408 animals were reported to the Department for diagnosis, observation or quarantine on account of the prevalence of rabies, and 9 were brought forward from the year 1918. The records have been classified as follows: —

Animals suspected of rabies, . . . . .	109
Animals exposed to rabies (4 reported in 1918, 174 in 1919), . . .	178
Animals which have inflicted bites upon persons (5 reported in 1918, 125 in 1919), . . . . .	130

*Animals suspected of Rabies.*

	Dogs.	Cattle.	Cats.
Diagnosis positive, . . . . .	89	1	1
Diagnosis negative, . . . . .	13	—	1
Diagnosis questionable, . . . . .	4	—	—



Of the 89 dogs classed as "diagnosis positive," 39 had bitten persons.

Of the 4 cases classed as "diagnosis questionable," 1 dog was reported as being affected with rabies, but from description of symptoms and as head was not obtainable for examination it is not recorded as a positive case; 1 dog after showing symptoms indicating rabies disappeared and could not be located; 1 showing symptoms gave negative diagnosis to laboratory examination; and the head of 1 animal arrived at laboratory in such a state of decomposition that examination could not be made.

*Animals exposed to Rabies.*

	Dogs.	Cattle.	Cats.	Pigs.	Horses.
Number released after a quarantine of ninety days.	79	5	-	2	-
Number killed, no symptoms having developed.	34	-	2	-	-
Number killed, positive symptoms having developed.	16	11	-	2	1
Number still held under observation,	28	-	-	-	-

*Animals which have inflicted Bites upon Persons.*

	Dogs.
Number killed during quarantine, no symptoms having developed, . . . . .	13
Number released after fourteen days' quarantine, . . . . .	115
Number still held under observation, . . . . .	2

Nine animals which were under observation at the close of the year 1918 were released, no symptoms of rabies having developed.

During the year we have received reports of 179 persons having been bitten by dogs. In all these cases the dogs have been immediately quarantined for observation, in accordance with our custom as previously referred to, except in those instances where the animals were immediately killed. Some of the quarantined dogs were killed by request of owners and others were killed on account of development of unmistakable symptoms of the disease. Of the 179 cases of dog bite, 131 of them were inflicted by dogs proved not to be affected with

rabies, 43 were inflicted by dogs proved to be positive cases of the disease, in 3 of the cases the laboratory diagnosis was questionable, and in 2 the dogs are now in quarantine for observation.

There have been examined in the laboratory during the past year the brains of 86 dogs, 1 cat and 1 cow. Of this number, 63 dogs, 1 cat and 1 cow showed positive evidence of the disease; in 21 dogs the diagnosis was negative, and the brains of 2 dogs were so decomposed at the time of examination that no diagnosis could be made. Of the 408 animals reported for observation, diagnosis or quarantine, 27 were, as far as the Department could determine, unlicensed and ownerless dogs, 18 of which proved to be positive cases of the disease.

The following table shows the number of positive cases of rabies by cities and towns: —

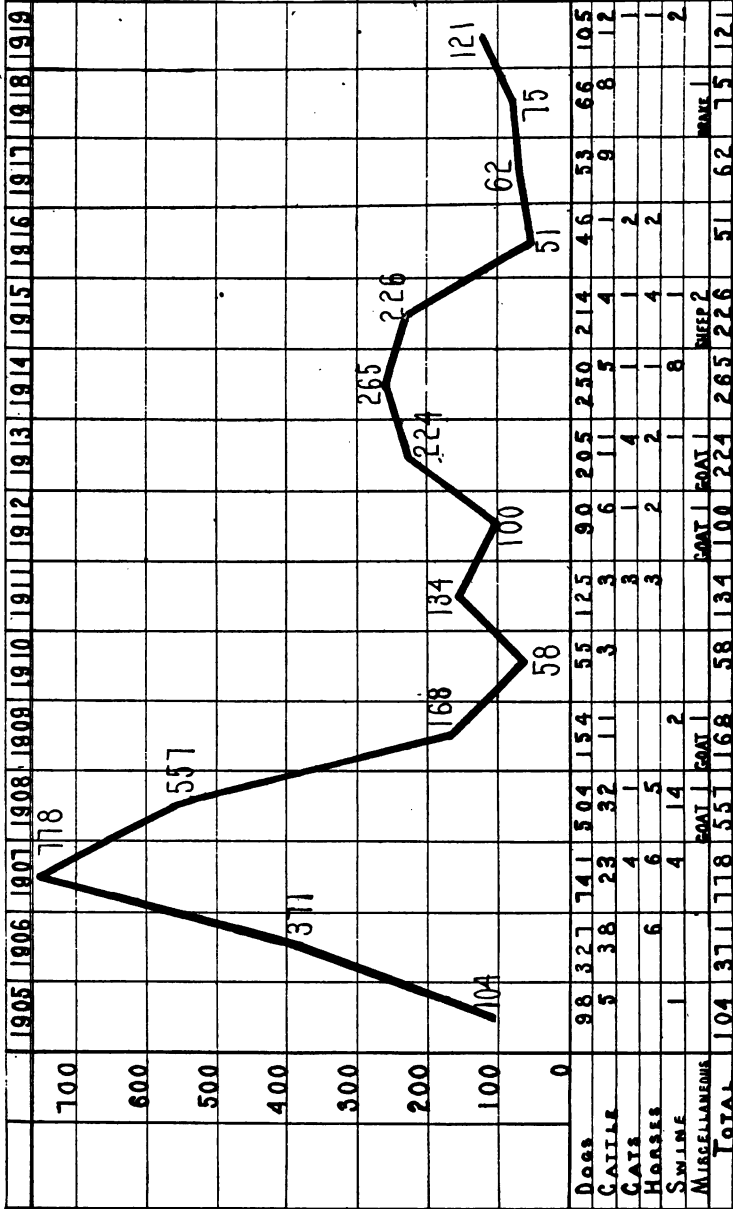
CITY OR TOWN.	Dogs.	Cattle.	Horses.	Pigs.	Cats.
Arlington, . . . . .	1	-	-	-	-
Attleboro, . . . . .	3	-	-	-	-
Berkley, . . . . .	1	-	-	-	-
Brookton, . . . . .	8	-	-	-	-
Concord, . . . . .	4	1	-	-	-
Dartmouth, . . . . .	1	-	1	-	-
Dighton, . . . . .	3	-	-	-	-
Easton, . . . . .	1	-	-	-	-
Fall River, . . . . .	7	-	-	-	-
Fitchburg, . . . . .	1	-	-	-	-
Freetown, . . . . .	2	-	-	-	-
Groton, . . . . .	1	-	-	-	-
Holden, . . . . .	1	-	-	-	-
Lincoln, . . . . .	2	-	-	-	-
Littleton, . . . . .	1	-	-	-	-
Maynard, . . . . .	1	-	-	-	-
Middleborough, . . . . .	7	1	-	-	-
Milton, . . . . .	1	-	-	-	-
New Bedford, . . . . .	15	-	-	-	-
Newton, . . . . .	4	-	-	-	1
North Attleborough, . . . . .	1	-	-	-	-
Northborough, . . . . .	1	-	-	-	-
Norton, . . . . .	2	-	-	-	-
Raynham, . . . . .	1	-	-	-	-

CITY OR TOWN.	Dogs.	Cattle.	Horses.	Pigs.	Cats.
Rehoboth, . . . . .	5	3	-	-	-
Revere, . . . . .	1	-	-	-	-
Seekonk, . . . . .	1	7	-	-	-
Somerset, . . . . .	5	-	-	-	-
Somerville, . . . . .	1	-	-	-	-
Stoughton, . . . . .	1	-	-	-	-
Swansea, . . . . .	5	-	-	-	-
Taunton, . . . . .	8	-	-	1	-
Townsend, . . . . .	1	-	-	1	-
Westport, . . . . .	1	-	-	-	-
Westwood, . . . . .	3	-	-	-	-
Worcester, . . . . .	2	-	-	-	-
Wrentham, . . . . .	1	-	-	-	-
Totals, . . . . .	105	12	1	2	1

One case of rabies developed in New York State, it later being shown that the animal had been exposed to the disease while in Massachusetts. One dog exposed in May developed the disease in November, with no evidence of additional exposure in the meantime. One case was proved to have been in contact with a herd of 12 cows, 10 of which developed the disease and were killed.

Following is a chart showing the proved cases of rabies in the several species of animals covering the period from 1905 to 1919, inclusive.

RABIES



## HOG CHOLERA.

During the past year the Department has continued and materially increased its work inaugurated in 1914 for control of the contagious diseases affecting swine. Of these, the principal one, hog cholera, formerly prevailed to such an extent and carried such a high mortality rate that the raising of swine in any considerable numbers in this State was a very uncertain enterprise, especially so if their principal food was garbage. Hog cholera would often break out, and, sweeping through a herd, would destroy many animals and leave others unfit for further feeding.

The utilization of garbage, a product recognized to contain all the food elements necessary for swine and which in many communities was being entirely wasted, seemed an economic necessity and an enterprise which it was generally conceded could be successfully carried out and rendered financially safe, provided the one great scourge of that species of animal could be controlled.

The industry of raising pure-bred swine, a business of rapidly increasing proportions and in which a large amount of capital is invested, also has been considered to be in large measure dependent for its success upon the protection of the animals from the ravages of contagious disease.

Toward this objective the work of the Department has now been directed for a period of six years. It was carefully planned and then inaugurated under careful supervision. Its many new phases have been carefully studied as they have appeared, and the execution of the work in the field has been improved as practical experience has shown to be advisable. We now unhesitatingly refer to it as an important public sanitary control work, the value of which has been shown by the economical results obtained, namely, the successful utilization of a great waste product and the conservation both of large amounts of food for human consumption and of commercial by-products of great value. It has also greatly stimulated interest in livestock production, and has fostered a business enterprise of no small proportions.

The reports of our inspectors of animals show that the number of swine found on the farms at the 1919 inspection exceeded the record of 1918 by 26,456, a gain of 32 per cent in the year, and 4,193 more people are recorded on the list of swine owners in 1919 than in 1918. These figures indicate a rapid growth of the swine-raising industry in Massachusetts under present conditions of protection afforded it by control of contagious disease.

Following is a list of cities and towns in which hog cholera prevention work has been carried on during the year ending Nov. 30, 1919:—

CITY OR TOWN.	Herds inoculated.	INOCULATIONS.		
		Serum and Virus.	Serum only.	Total.
Abington, . . . . .	3	301	397	698
Adams, . . . . .	4	52	4	56
Agawam, . . . . .	16	158	68	226
Amesbury, . . . . .	9	15	8	23
Amherst, . . . . .	5	78	91	167
Andover, . . . . .	6	96	206	302
Arlington, . . . . .	1	0	3	3
Ashby, . . . . .	1	22	25	47
Athol, . . . . .	4	9	3	12
Attleboro, . . . . .	6	27	25	52
Auburn, . . . . .	13	33	4	37
Ayer, . . . . .	9	26	668	694
Barnstable, . . . . .	13	121	43	164
Barre, . . . . .	1	35	27	62
Bedford, . . . . .	5	41	47	88
Belchertown, . . . . .	1	6	3	9
Belmont, . . . . .	9	1,101	1,333	2,434
Berlin, . . . . .	4	19	9	28
Barnardston, . . . . .	1	15	0	15
Beverly, . . . . .	2	25	26	51
Billerica, . . . . .	4	85	36	121
Bolton, . . . . .	4	59	39	98
Boston, . . . . .	10	572	868	1,440
Bourne, . . . . .	4	7	0	7
Boxford, . . . . .	2	11	20	31
Braintree, . . . . .	3	0	10	10
Brewster, . . . . .	1	9	6	15
Bridgewater, . . . . .	4	217	46	263
Brimfield, . . . . .	4	1	12	13
Brookton, . . . . .	6	750	798	1,548
Brookfield, . . . . .	4	60	27	87
Brookline, . . . . .	3	25	21	46
Burlington, . . . . .	5	641	548	1,189
Cambridge, . . . . .	2	0	26	26
Canton, . . . . .	4	28	29	57
Charlemont, . . . . .	1	16	0	16
Charlton, . . . . .	1	15	0	15
Chatham, . . . . .	2	2	0	2
Chelmsford, . . . . .	5	36	108	144
Chelsea, . . . . .	2	0	20	20
Cheshire, . . . . .	2	0	0	0
Chicopee, . . . . .	50	361	137	498
Clinton, . . . . .	9	26	30	56
Cohasset, . . . . .	4	19	36	55
Concord, . . . . .	8	219	154	373
Dalton, . . . . .	7	167	111	278
Dana, . . . . .	1	10	15	25

CITY OR TOWN.	Herds inoculated.	INOCULATIONS.		
		Serum and Virus.	Serum only.	Total.
Danvers, . . . . .	3	335	230	565
Dedham, . . . . .	8	115	99	214
Deerfield, . . . . .	5	29	16	45
Dighton, . . . . .	1	9	10	19
Dover, . . . . .	8	197	268	465
Dracut, . . . . .	3	28	6	34
Dudley, . . . . .	5	14	24	38
Easthampton, . . . . .	15	52	5	57
East Longmeadow, . . . . .	8	130	30	160
Easton, . . . . .	1	3	5	8
Edgartown, . . . . .	7	6	0	6
Fairhaven, . . . . .	4	3	12	15
Falmouth, . . . . .	4	45	26	71
Fitchburg, . . . . .	62	592	476	1,068
Foxborough, . . . . .	4	54	27	81
Framingham, . . . . .	4	85	63	148
Gardner, . . . . .	32	79	142	221
Georgetown, . . . . .	1	2	0	2
Gloucester, . . . . .	26	421	600	1,021
Grafton, . . . . .	27	339	234	573
Granby, . . . . .	2	24	0	24
Great Barrington, . . . . .	9	16	20	36
Greenfield, . . . . .	3	212	306	518
Groton, . . . . .	5	86	95	181
Groveland, . . . . .	1	2	0	2
Hadley, . . . . .	4	25	0	25
Hamilton, . . . . .	1	10	0	10
Hampden, . . . . .	2	28	0	28
Hancock, . . . . .	1	0	2	2
Hanson, . . . . .	1	1	0	1
Hardwick, . . . . .	3	16	33	49
Harvard, . . . . .	11	127	73	200
Harwich, . . . . .	3	3	113	116
Hatfield, . . . . .	6	2	8	10
Haverhill, . . . . .	8	65	38	103
Hingham, . . . . .	2	18	0	18
Hinsdale, . . . . .	1	2	6	8
Holbrook, . . . . .	3	1	0	1
Holden, . . . . .	7	79	73	152
Holliston, . . . . .	2	31	28	59
Holyoke, . . . . .	18	335	490	825
Hopkinton, . . . . .	1	2	0	2
Hudson, . . . . .	3	65	36	101
Hull, . . . . .	1	0	20	20
Huntington, . . . . .	1	3	0	3
Ipewich, . . . . .	4	121	214	335
Kingston, . . . . .	7	22	0	22
Lakeville, . . . . .	1	92	75	167
Lancaster, . . . . .	9	61	47	108
Lanesborough, . . . . .	2	54	0	54
Lawrence, . . . . .	6	24	27	51
Lee, . . . . .	8	52	164	216
Lenox, . . . . .	10	83	3	86
Leominster, . . . . .	5	110	128	238
Lexington, . . . . .	28	2,766	2,887	5,653
Lincoln, . . . . .	10	674	376	1,050
Littleton, . . . . .	4	300	171	471
Longmeadow, . . . . .	6	143	92	235
Lowell, . . . . .	9	212	83	295
Ludlow, . . . . .	17	307	369	676
Lunenburg, . . . . .	4	17	16	33
Lynn, . . . . .	8	145	73	218
Malden, . . . . .	2	12	0	12
Manchester, . . . . .	9	84	55	139
Mansfield, . . . . .	3	17	0	17
Marblehead, . . . . .	18	270	270	540
Marion, . . . . .	4	25	16	41
Marshfield, . . . . .	3	27	22	49
Mashpee, . . . . .	1	10	0	10
Maynard, . . . . .	1	64	5	69
Medfield, . . . . .	2	196	169	365
Medford, . . . . .	3	57	53	110
Medway, . . . . .	3	2	4	6

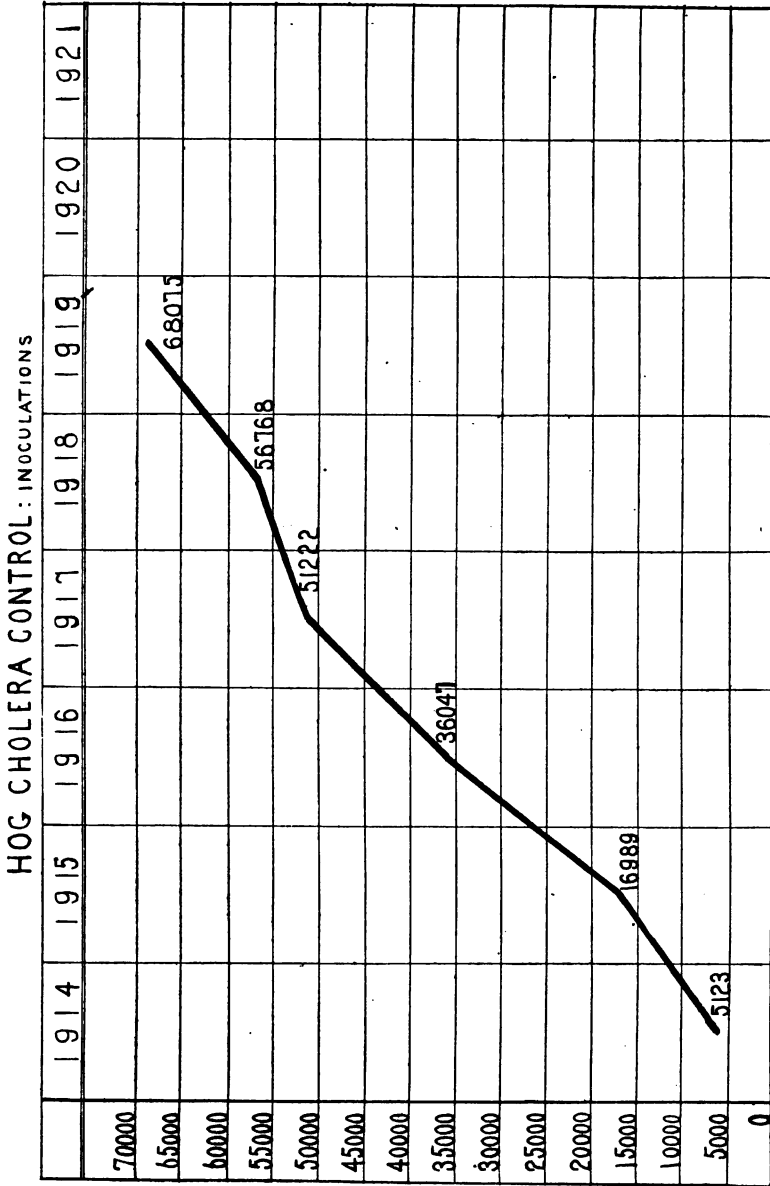
CITY OR TOWN.	Herds inoculated.	INOCULATIONS.		
		Serum and Virus.	Serum only.	Total.
Melrose, . . . . .	4	1	6	7
Mendon, . . . . .	1	4	0	4
Merrimac, . . . . .	1	14	1	15
Methuen, . . . . .	11	82	59	141
Middleborough, . . . . .	4	80	98	178
Middleton, . . . . .	3	11	4	15
Millford, . . . . .	11	35	8	43
Millbury, . . . . .	7	108	58	166
Milton, . . . . .	4	180	322	502
Monson, . . . . .	2	86	84	170
Montague, . . . . .	1	6	0	6
Monterey, . . . . .	7	35	47	82
Nantucket, . . . . .	9	15	4	19
Natick, . . . . .	4	181	120	301
Needham, . . . . .	15	739	721	1,460
New Bedford, . . . . .	1	38	29	67
Newbury, . . . . .	6	27	52	79
Newburyport, . . . . .	28	100	46	146
New Marlborough, . . . . .	2	3	0	3
Newton, . . . . .	5	219	145	364
Norfolk, . . . . .	2	77	111	188
North Adams, . . . . .	6	318	318	636
Northampton, . . . . .	20	439	271	710
North Andover, . . . . .	5	11	7	18
North Attleborough, . . . . .	8	56	141	197
Northbridge, . . . . .	4	112	176	288
North Brookfield, . . . . .	1	5	10	15
Northfield, . . . . .	4	135	329	464
North Reading, . . . . .	1	79	114	193
Norton, . . . . .	2	33	24	57
Norwell, . . . . .	1	2	0	2
Norwood, . . . . .	5	28	81	109
Orange, . . . . .	2	19	22	41
Palmer, . . . . .	3	50	38	88
Paxton, . . . . .	2	14	41	55
Peabody, . . . . .	19	416	422	838
Pepperell, . . . . .	3	22	8	30
Pittsfield, . . . . .	45	1,252	909	2,161
Plymouth, . . . . .	9	234	324	558
Provincetown, . . . . .	34	43	61	104
Randolph, . . . . .	1	2	4	6
Reading, . . . . .	1	302	487	789
Rehoboth, . . . . .	2	120	265	385
Revere, . . . . .	4	653	1,368	2,021
Richmond, . . . . .	1	6	0	6
Rockport, . . . . .	8	142	212	354
Rowley, . . . . .	1	8	1	9
Russell, . . . . .	1	14	8	22
Rutland, . . . . .	4	117	26	143
Salem, . . . . .	9	422	790	1,212
Salisbury, . . . . .	1	4	10	14
Sandwich, . . . . .	3	17	9	26
Saugus, . . . . .	14	123	182	305
Scituate, . . . . .	2	13	29	42
Seekonk, . . . . .	71	514	371	885
Sharon, . . . . .	1	27	17	44
Shelburne, . . . . .	2	25	0	25
Sherborn, . . . . .	6	176	71	247
Shirley, . . . . .	1	92	159	251
Shrewsbury, . . . . .	3	225	607	833
Somerville, . . . . .	3	13	28	41
Southborough, . . . . .	1	1	13	14
Southbridge, . . . . .	13	26	39	65
South Hadley, . . . . .	15	327	186	513
Springfield, . . . . .	49	1,571	1,122	2,693
Stoneham, . . . . .	4	140	348	488
Stoughton, . . . . .	14	68	176	244
Sudbury, . . . . .	2	9	100	109
Sunderland, . . . . .	5	27	0	27
Sutton, . . . . .	8	10	12	22
Swampscott, . . . . .	1	0	5	5
Swansea, . . . . .	6	267	133	400
Taunton, . . . . .	16	35	99	134



CITY OR TOWN.	Herds inoculated.	INOCULATIONS.		
		Serum and Virus.	Serum only.	Total.
Templeton, . . . . .	17	80	69	149
Tewksbury, . . . . .	1	229	92	321
Tisbury, . . . . .	2	13	45	58
Topsfield, . . . . .	1	0	16	16
Townsend, . . . . .	8	51	23	74
Tyngsborough, . . . . .	1	63	87	150
Upton, . . . . .	1	4	20	24
Uxbridge, . . . . .	1	4	3	7
Wakefield, . . . . .	6	73	63	136
Wales, . . . . .	1	0	1	1
Walpole, . . . . .	7	16	35	51
Waltham, . . . . .	24	1,504	1,730	3,234
Ware, . . . . .	1	6	0	6
Wareham, . . . . .	7	18	44	62
Warren, . . . . .	3	11	11	22
Watertown, . . . . .	6	453	386	839
Webster, . . . . .	6	19	47	66
Wellesley, . . . . .	2	9	82	91
Wenham, . . . . .	2	23	54	77
Westborough, . . . . .	3	235	232	467
Westfield, . . . . .	20	187	171	358
Westford, . . . . .	2	18	11	29
Westminster, . . . . .	2	2	3	5
Weston, . . . . .	4	40	84	124
Westport, . . . . .	10	141	121	262
West Springfield, . . . . .	12	75	77	152
West Stockbridge, . . . . .	1	0	6	6
Westwood, . . . . .	5	203	147	350
Weymouth, . . . . .	7	163	170	333
Whately, . . . . .	1	2	0	2
Whitman, . . . . .	2	14	8	22
Wilbraham, . . . . .	3	36	12	48
Williamsburg, . . . . .	2	7	2	9
Williamstown, . . . . .	4	13	5	18
Wilmington, . . . . .	2	12	22	34
Winchendon, . . . . .	6	31	34	65
Woburn, . . . . .	9	139	94	233
Worcester, . . . . .	41	3,450	3,466	6,916
Wrentham, . . . . .	2	44	139	183
Totals, . . . . .	1,589	33,355	34,720	68,075

The preceding table shows that work has been done in 232 cities and towns this year, 14 more than during 1918, and necessitating 2,545 visits by one or more inspectors. In addition there were 89 visits made to places where the swine were not treated for the following reasons: the animals in some instances had no chance of recovery; in others the trouble was found to be some non-contagious infection; again in some of the cases proper sanitary conditions necessary to successful work could not be established; and in a few cases the owners did not desire to have the animals treated.

The chart on the opposite page shows in a general way the increase in hog cholera prevention work from the time of its inception to the present, and comparative statistics in detail are shown in tables which follow it.



Comparative Statistics on Hog Cholera Control Work for 1914, 1915, 1916, 1917, 1918 and 1919.

	1914.	1915.	1916.	1917.	1918.	1919.
Outbreaks reported in which a negative diagnosis was made, . . . . .	20	122	57	42	39	54
Number of herds known to be infected, . . . . .	80	227	253	359	232	184
Number of herds known to be infected in which serum treatment was not administered, <sup>1</sup>	—	77	43	77	75	35
Number of infected herds in which serum treatment was administered, . . . . .	65	150	192	282	157	149
<i>Herds infected at the Time Treatment was administered.</i>						
Number of "serum only" treatments, including those administered to infected animals and to those too young for simultaneous treatment.	428	10,300	14,747	24,828	7,559	3,076
Mortality from hog cholera following "serum only" treatment (per cent), <sup>2</sup> . . . . .	9.5	7.0	3.70	1.75	3.90	5.5
Number of simultaneous treatments. These were administered to animals apparently healthy at time of treatment.	591	5,826	13,643	15,524	4,055	1,282
Mortality from hog cholera following the simultaneous treatment in infected herds (per cent), <sup>2</sup>	2.0	1.2	.60	.44	2.26	2.1
Total number of treatments administered in infected herds, . . . . .	1,019 <sup>3</sup>	16,126	28,390	40,352	11,614	4,358
Total mortality following both "serum only" and simultaneous treatment in infected herds (per cent), <sup>2</sup>	5.2	4.9	2.21	1.24 <sup>4</sup>	3.34	4.5

*Preventive Inoculation in Apparently Healthy Herds.*

Number of herds, . . . . .	2	95	113 *	470 †	1,275	1,440
Number of inoculations, . . . . .	104	863	7,657	10,870	44,754	68,717
Number of animals which died following simultaneous inoculations, . . . . .	0	1	0	3	8 ‡	42 §
Total number of inoculations, . . . . .	5,123	16,989	36,047	51,222	56,768	68,075

<sup>1</sup> Due to animals being too sick to treat, showing symptoms of secondary infection, or to owners not desiring the same.

<sup>2</sup> These figures show percentages, not animals.

<sup>3</sup> Plus 4,000 which were treated, and died or were killed before results could be ascertained. These deaths were due to the use of serum which was impotent and virus which was not virulent, before the present regulations were made.

<sup>4</sup> This does not include approximately 50 animals which died on one farm, on which a final diagnosis was not made. Clinically and by autopsies, it was impossible to determine whether the disease was hog cholera or hemorrhagic septicemia. Laboratory examinations indicate the latter, but before the work could be completed the losses stopped, and more material which was needed for a final diagnosis was not available.

<sup>5</sup> The large majority under this classification are herds which in previous years were classified as infected herds and which had yearly sustained heavy losses from hog cholera. The majority of them are garbage-fed, and experience shows that should treatments be discontinued an outbreak of hog cholera would follow very closely. They are therefore classified as herds in which no infection was apparent at the time of treatment, whereas in reality they are infected herds in which the disease is kept completely under control while treatments are continued.

<sup>6</sup> None of these animals were autopsied; consequently, we are unable to say whether or not death was due to cholera.

The preceding table shows that nearly 12,000 more treatments have been given to swine this year than in 1918 and in 157 more herds. With this greater number of animals treated, either in prevention or cure of hog cholera, it is significant that the number of herds found to be already infected at the time of treatment is 48 *less* than last year. This fact indicates the trend of the whole situation toward the desired objective of control of the disease.

In explanation of the increasing mortality rate both in infected herds and in those apparently healthy, it should be said that it is due to the prevalence of hemorrhagic septicemia (referred to later in this report), which disease has caused the deaths of many animals, and which deaths are, in accordance with our custom, recorded in the mortality table of animals at any time treated in prevention or cure of hog cholera.

During the past year we have continued the practice, first advised in 1918, of treating animals in herds where the infection was found to be extensive to a degree which we formerly thought rendered treatment inadvisable. If the infection is of an acute character, and the animals are not showing symptoms of a chronic type of the disease or of a secondary infection, we now treat the animals, finding that even under unfavorable conditions we can generally save enough of them to offset those which succumb, and thereby reduce by a considerable amount the money loss which the owner would sustain if none of the animals were treated because of doubtful chance of success.

It is satisfactory to note a rapidly increasing number of swine owners who realize that the better thing for them to do is to have their swine treated before infection appears among them and *prevent* hog cholera rather than attempt to cure it. In the one case the outlay (for serum and virus only) is small and not to be compared with the probable loss which would sooner or later occur in a herd not immunized against hog cholera.

On the whole, the sanitary conditions under which swine are kept are being gradually improved, as the swine owners are convinced, either by our strict regulations when service is requested or by actual experience, that proper sanitary conditions of piggeries not only limit the prevalence of contagious disease but influence the growth of the animals. While it is nearly

impossible to obtain perfect sanitary conditions in piggeries, especially where garbage is fed, much can be done in this direction by systematic attention to detail.

Swine are to-day probably receiving more particular attention on the part of experienced and specially trained individuals than ever before, with the result that much intensive study is being given the subject of their diseases. Some of these either formerly did not prevail or were not recognized as specific infections. For the past two years, however, some of them have prevailed to such an extent in Massachusetts as to demand our particular attention. Their prevalence as primary causes of swine sickness and their relation to hog cholera are being studied in field and laboratory in many parts of the world by a large number of workers. In the meantime such practical methods of control as have already been proved to be effective are being applied.

Of these diseases, hemorrhagic septicemia and necrotic enteritis are the ones at present recognized as being of the most importance in this State.

The clinical symptoms of hemorrhagic septicemia often so closely resemble those of hog cholera as to make a differential diagnosis in the field very difficult and sometimes impossible. They are frequently determined to be coexistent, and decision often cannot be made as to which one is the primary causative factor and which the secondary. We consequently in many instances treat two different infections in the same animal. As far as saving the animals goes the results are generally satisfactory if the preventive treatments, found to be effective when used singly, are applied simultaneously.

Immunization to hog cholera is always advised, either by single or double treatment as the conditions may warrant, and treatment of the other infections in addition thereto, as may seem advisable.

During the year 16,180 treatments have been administered to swine in prevention or cure of hemorrhagic septicemia, a very large increase of this work over that done in 1918. The value of the work is without question. In many instances we have seen an outbreak of this disease checked in twenty-four hours.

The probability is that there will be an increased demand for

service by our department inspectors in control of swine diseases the coming year. The work seems to be a popular one among those interested in swine production, as shown by their constantly increasing requests for this service, and, if the ratio of yearly increase in the number of swine is maintained, our present force will be taxed to the utmost to perform it in a satisfactory manner.

#### MISCELLANEOUS DISEASES.

*Anthrax.* — This disease, existing in many different parts of the world and causing an annual loss of many thousands of animals, has never prevailed to a serious extent in Massachusetts. Every year, however, a few of our animals lose their lives by it, and prompt attention to any outbreak reported is necessary to limit its extension. While nearly all species of domesticated animals are susceptible to the infection, we find that cattle and sheep are the ones most commonly affected. The disease is communicable to the human subject, the mode of transmission generally being by the handling of carcasses, raw hides or wool of animals which have died of the disease. The Department is therefore concerned not only with the danger of this disease to our live stock but also with the danger of its transmission to the human subject.

All reported cases of an outbreak among animals are immediately investigated and subsequent action is taken as deemed advisable by the facts disclosed. Positive diagnosis is first necessary, and, as the animals generally either are found dead or die before arrival of a veterinarian or Department inspector, a post-mortem examination would ordinarily be depended upon to confirm the suspicions of anthrax. As post-mortem appearances in this disease are often not sufficiently characteristic to justify a positive diagnosis, and as the opening of a carcass allows the body fluids to escape and possibly spread the infection, it is advised that the suspected carcass be not opened, but that a specimen of blood be drawn from the cadaver on to a piece of glass and then allowed to dry in the air. If this specimen is not badly contaminated by careless preparation, and is promptly forwarded to a laboratory, there is no difficulty in determining whether or not anthrax bacilli are present.

A field diagnosis or suspicion of anthrax having been confirmed, preventive measures at once follow. They consist of proper disposal of diseased carcasses, disinfection of premises, and preventive inoculation of susceptible and exposed animals.

To prevent infection spreading from a carcass it should be burned or deeply buried, covered with quicklime. Anthrax organisms or their spores if not destroyed may continue to infect soil for a long time; in many instances such infection has been found to exist for a number of years. We recommend that any contaminated ground be burned over and the surface area above the buried carcass be fenced and burned over yearly. Any contaminated portions of buildings if wooden should be torn out and burned, and if concrete should be thoroughly disinfected.

The remaining animals of the herd should be at once removed to other buildings or areas, and the apparently healthy ones inoculated in prevention of the disease. Animals already affected are sometimes successfully treated, but ordinarily the disease runs such a rapid course that death takes place before the animal is noticed to be seriously sick. Consequently our efforts are generally limited to protection of the animals not showing symptoms. Although a certain percentage of deaths may reasonably be expected to occur among the inoculated animals, we find in actual experience that fatalities are very few.

Preventive inoculation is supposed to confer immunity for a period of at least twelve months. At premises where an outbreak has occurred and there is reason to fear permanent infection, it is advised that all susceptible animals be given a preventive inoculation each succeeding year for a certain period.

During the past year the disease has occurred only in cattle, 9 head on 5 different premises having been found to be affected. Of these 9 animals, 4 were in the town of Conway, 2 in the town of Lancaster, 1 in Egremont, 1 in Gardner, and 1 in Sheffield. The preventive inoculation has been applied to 128 head of cattle on 8 different premises located in 5 towns.

Reports of the existence of anthrax on 4 premises in 4 different towns proved upon investigation to be unfounded. In another case the animals recovered. On the cases reported from 3 of the 4 premises in 3 of the 4 towns laboratory diag-



nosis was negative. The specimens submitted from one town were too decomposed for a proper examination, and the trouble was diagnosed as forage poison.

*Blackleg.* — This disease is very prevalent in many different parts of the world, and if not controlled causes severe losses on account of its high death rate. A disease affecting young cattle only and readily prevented by a yearly inoculation just before turning to pasture in the spring, its prevalence should be limited in this State and the fatalities few, and this no doubt would be the case if cattle owners would avail themselves of the free service of the Department of Animal Industry in prevention of the disease. On many farms in different parts of the State it has been found by actual experience that if the young cattle are not given preventive inoculation a certain number of deaths are liable to occur during the pasture season, which fact indicates that a permanent or continuous infection of the soil exists, constituting a danger to all susceptible animals.

The security which the Department's prevention work affords cattle owners in infected districts is so apparent that a steady increase in the number of applications for treatment received is noted from year to year. During 1919 we have administered preventive inoculation to 1,202 young cattle on 148 farms located in 47 towns, as tabulated below: —

	Premises.		Premises.
Adams, . . . . .	1	Leverett, . . . . .	1
Ashburnham, . . . . .	4	Littleton, . . . . .	2
Ashby, . . . . .	10	Lunenburg, . . . . .	1
Ashfield, . . . . .	1	Montague, . . . . .	1
Athol, . . . . .	3	New Bedford, . . . . .	1
Brimfield, . . . . .	4	New Marlborough, . . . . .	3
Chester, . . . . .	5	North Adams, . . . . .	3
Gardner, . . . . .	1	Northampton, . . . . .	6
Granville, . . . . .	2	Orange, . . . . .	13
Great Barrington, . . . . .	5	Peru, . . . . .	1
Greenwich, . . . . .	2	Pittsfield, . . . . .	3
Hadley, . . . . .	1	Prescott, . . . . .	5
Harvard, . . . . .	4	Princeton, . . . . .	1
Holyoke, . . . . .	3	Rowe, . . . . .	8
Huntington, . . . . .	1	Royalston, . . . . .	1
Lee, . . . . .	13	Rutland, . . . . .	1
Leicester, . . . . .	1	Sandisfield, . . . . .	4

	Premises.		Premises.
Shelburne, . . . . .	6	Wendell, . . . . .	1
Southampton, . . . . .	2	Westhampton, . . . . .	1
South Hadley, . . . . .	1	Westminster, . . . . .	1
Sterling, . . . . .	2	Williamstown, . . . . .	2
Townsend, . . . . .	7	Winchendon, . . . . .	1
Tyringham, . . . . .	2	Windsor, . . . . .	1
Warwick, . . . . .	5		

The records show that 27 deaths from blackleg on 13 different premises have been reported during the year, an increase of 10 over the year 1918, and that we have inoculated 11 per cent more animals this year than in 1918.

The increase in this branch of the Department's work is undoubtedly due to the fact that cattle owners are more generally informed that their young stock can be successfully protected against the disease without in any way interfering with their health or growth.

The same general recommendations regarding disposal of infected carcasses by burning or deep burial, followed by disinfection of contaminated areas or buildings, are applicable as in cases of anthrax and referred to in the remarks on that disease. The immediate removal of stock from the pastures where an outbreak occurs is also recommended.

*Actinomycosis.* — Very few cases of this disease have been reported this year. Our customary action is to apply quarantine to animals reported as affected, while allowing owners to fatten them for slaughter if desired.

Our attention has been called to 10 cases only during the year: 1 each in Hardwick, Kingston, Northfield, Taunton, Townsend and Wareham, and 4 in the town of Grafton. Of the 10 cases reported, 4 were released as not affected; 2 were released after treatment, the animals having recovered; and 4 were condemned and slaughtered under proper meat inspection.

*Hemorrhagic Septicemia in Cattle.* — This is a disease which seems to be gradually increasing in prevalence each succeeding year. Our records for this year show that 9 more fatal cases have been reported than during 1918. Thirty-one head of cattle have died from the disease, these fatal cases occurring on 14 different premises in 10 different towns, namely, Buckland,

Deerfield, Fitchburg, Groton, Lancaster, Rowe, Southwick, Wellesley, Wendell and Worcester.

Its prevalence among swine is referred to on page 41 in connection with our work in prevention of hog cholera, for the reason that our field men engaged in inoculating swine against cholera have their attention directed to cases of hemorrhagic septicemia among them, and the record of both diseases is made at one time.

The symptoms of hemorrhagic septicemia affecting cattle very closely resemble those of anthrax in many instances, and a differential diagnosis between these two diseases has frequently been possible only as a result of a laboratory examination of specimens from the carcasses of the animals.

Preventive treatment has recently been developed to such a degree that it has been found possible to protect the remaining healthy animals, in herds where cases of the disease have occurred, by inoculation of biological preparations manufactured for the purpose. We have applied this preventive inoculation to 52 head of cattle during the past year.

It is generally found that removal of the herd from the pasture or premises where a fatal case has developed results in preventing further extension of the disease. This experience indicates that one source of the infection is located in the soil, and that contagion does not spread rapidly from animal to animal. The experience of many other States, where a widespread prevalence of this disease has been caused by shipments of cattle to the farms from public stockyards, has not occurred in Massachusetts. This is undoubtedly due to the fact that much of the restocking of herds in Massachusetts is by the addition of cattle shipped directly from farms of near-by States and not often through any public stockyard. At the principal Massachusetts stockyards, located at Brighton, this disease has not appeared, and it therefore seems that Massachusetts herds are at present safe from the extension of the disease through the channels by which it has been spread in many other sections of the country.

*Mange.* — This very troublesome disease seems to have been much less prevalent than usual in Massachusetts during the past year. Our records show a smaller number of animals to have been affected with it than during the years 1916, 1917 or

1918. In 1916, 85 head of cattle were reported as affected; during the past year 76 head have been so reported. Thirteen horses on 9 premises have also been reported as showing positive symptoms of this disease. The premises on which cattle have been reported are located in Concord, Dartmouth, Grafton, Lincoln, Merrimac, Milton, Needham, Northampton and Winchester. The places from which affected horses have been reported are Abington, Concord, Framingham, Medford, Newton, Revere, Somerville, Taunton, Watertown and Worcester.

Successful treatment of this disease is possible if the owner or attendant will faithfully carry out the local application of proper medicinal remedies. The treatment recommended is not expensive, but it is very inconvenient in application. It is our custom to quarantine affected animals if they are kept under conditions which favor the spread of the disease, and particularly where owners and attendants are not likely to properly attend to them. Fortunately, however, most of the owners of cattle affected with mange realize that its cure means an increased amount of animal products, and they therefore faithfully follow directions for treatment. Successful treatment of the disease in horses also means increased capacity of the animals for work and less feed necessary to keep them in proper condition.

*Foot-and-mouth Disease.* — This disease has not appeared in Massachusetts during the past three years, although we have received reports of its existence in the towns of Ashland and Lenox. Prompt investigation of these reports proved them to be unfounded. As it has lately prevailed to an alarming extent in many foreign countries, we must consider the possibility of its appearance in this country at any time. We are assured that the Federal authorities are carefully watching the situation, and have formulated plans for the prompt inauguration of forceful control work if the emergency occurs. Locally, all Department veterinarians, inspectors of animals and private veterinarians are requested to be constantly on watch and to promptly report any suspicious cases, in order that measures may be immediately taken to prevent its spread.

*Diseases of Sheep.* — On one of the smaller islands off the southern coast of the State owned by a private individual, a flock of about 750 sheep are maintained. In this flock the

disease known as "sheep scab" or "scabies" appeared immediately after the animals were sheared in June, and when reported to this office about 125 animals were affected. On a positive diagnosis being established by consultation of the veterinarian in attendance with a Department agent, arrangements for "dipping" the animals were soon made and carried into execution under supervision of the attending veterinarian. All the animals were twice subjected to the lime and sulphur dip, in accordance with a plan found effective by this Department in its experience with control of an outbreak of the disease on Nantucket Island in 1915. At the annual round-up of the animals the coming spring further attention to control measures will be given and further dipping be made if the same is found necessary. It seems probable that the disease was brought to this flock by the shearers, as its first appearance occurred soon after their work there and it had not existed in the flock previously.

A few cases of nodular disease have been reported from the towns of Freetown, Salisbury and Uxbridge. This disease is due to an intestinal parasite which causes more or less loss by death of young lambs, and also by retarding the proper development of others which are harboring it. A case of forage poisoning occurred in the town of Orange.

*Infectious Abortion.* — The prevalence of infectious abortion in Massachusetts herds of cattle during the past year has been of the same great concern as has been referred to in previous reports. Its ravages are well known to every one engaged in the production of milk or in the breeding of thoroughbred cattle, and the losses occasioned by its attendant results are estimated to be second only to those caused by bovine tuberculosis. As much of the loss caused by this disease is occasioned by resulting sterility, either permanent or temporary, which condition should properly be the subject of investigation by the herd owner's private veterinarian, followed by such treatment as he may recommend, it would seem that the function of this Department in connection with the situation should be limited to the giving of advice as to the general management of infected herds, and as to the carrying out of sanitary measures recognized as essential to any progress in controlling the prevalence of the infection. In other words, it does not seem feasible

for this Department at this time to enter the field of specific treatment of herds in which the infection prevails, or of individual animals suffering from any one of the many different pathological conditions concurrent with the infection. Such work can probably be attended to more successfully by the private veterinarian who has fitted himself for this branch of expert veterinary practice.

*Equine Tuberculosis.* — Tuberculosis is so rarely found in the equine species that special mention should be made of a horse killed by the Department in the town of Harvard in April of this year, post-mortem examination of which revealed extensive lesions of this disease, involving the major portion of the spleen and both lungs. This horse came from the West nine years ago, had been in the same town practically ever since his arrival, and had been used as a draft horse on two different farm premises. He had apparently been in good health until last winter when he began to lose flesh rapidly, became muscularly weak, and showed a rapid respiration accompanied by a sonorous cough. No history could be obtained of other cases of tuberculosis having existed on either of the farms where he had spent the major portion of his life. Positive diagnosis of the case was made as a result of laboratory examination.

The Department has frequently been called upon to make examination of animals reported to be affected with a contagious disease, and it has been found that the disease with which the animals may have been affected was not of a contagious nature. Among the diseases found in such instances may be mentioned acute indigestion, cancer, foot rot, forage poisoning, lead poisoning, keratitis, non-nutrition, pericarditis, pneumonia and traumatic septicemia. As we are anxious, however, to at all times be thoroughly informed as to the prevalence of contagious disease among our domestic animals, it is our custom to promptly investigate all such reports from whomsoever received.

In September it was reported that an unusual number of deaths had occurred among horses pastured in the towns of Hingham, Norwell, Hull and Scituate, in an area about 10 miles square. In all, 10 horses had died or were killed, all exhibiting

a similar train of symptoms, namely, cerebral congestion, staggering gait, loss of co-ordination, partial paralysis of the hind limbs finally becoming complete, inability to rise, followed by death in thirty-six to forty-eight hours in some of the cases.

Specimens were procured from the next case reported, which proved to be the last one, and submitted to laboratory examination. This was, however, unsatisfactory, no specific organism being found. Recorded symptoms all pointed to some form of forage poisoning as responsible for the fatalities, but the specific forage could not be identified. A prominent veterinary bacteriologist suggested the *Bacillus botulinus* as the possible causative organism, the history of the cases being similar to that of a number of cases in which the *Bacillus botulinus* was found to be present. Laboratory examination, however, did not substantiate this suggestion. The cases were all reported by one veterinarian and no other cases of a similar character were reported from other sections.

#### LABORATORY EXAMINATIONS.

We constantly request the submission to this Department of specimens for laboratory examination where contagious disease is suspected, or where for any reason positive diagnosis is necessary and cannot be made by other methods. In addition to the brains of 88 animals submitted because suspected of rabies and 125 samples of blood taken from animals in our work of glanders control, there have been 78 other specimens submitted to the laboratory for examination and diagnosis. These may be listed as follows under the name of the disease suspected, together with the finding of the laboratory: —

	Positive.	Negative.
Actinomycosis, . . . . .	—	1
Anthrax, . . . . .	5	6
Blackleg, . . . . .	3	3
Botulism, . . . . .	—	2
Glanders, . . . . .	—	3
Hemorrhagic septicemia, . . . . .	5	7
Infectious abortion, . . . . .	4	—
Malignant lymphoma, . . . . .	1	—
Nodular disease, . . . . .	11	—
Tuberculosis, . . . . .	11	16
	30	38
No diagnosis, . . . . .		10

The importance and absolute necessity of laboratory examinations in connection with the work of this Department are apparent. These examinations are specially important in connection with diseases which are communicable to the human subject, notably rabies, positive diagnosis of which by clinical symptoms of the suspected animal is often impossible for the reason that in many instances the infected animal is killed before positive clinical symptoms have appeared. In case persons have been bitten by such an animal a diagnosis by laboratory examination becomes necessary for the purpose of determining whether or not preventive inoculation should be administered to the persons bitten. Failure to make diagnosis in such instances might result in the loss of human life. Laboratory investigation in connection with our control work in other contagious diseases is also very necessary to its success and really indispensable at the present day. The laboratory of the State Department of Health has efficiently performed this entire service for us during the year.

#### ANNUAL INSPECTION OF FARM ANIMALS AND PREMISES.

In accordance with sections 14 to 24 of chapter 90 of the Revised Laws and pursuant to an order of the Commissioner issued Jan. 17, 1919, to inspectors of animals of all cities and towns of the Commonwealth, an inspection of all cattle, sheep and swine and the premises on which they are kept was duly made, and every inspector submitted to this office a report of his work. The inspector also made a duplicate report of his visit to each individual premises, leaving it with the owner.

The complete reports sent to the office of the Department are carefully gone over and the information contained in them is tabulated for reference. They furnish a fairly correct and comprehensive survey of animal health in general and of the sanitary conditions under which Massachusetts live stock is kept, also valuable data for yearly comparison and for consideration when formulating general policies for disease control work. By reference to them may be gathered information as to existing conditions at any one point where unusual prevalence of disease may appear.

These reports also furnish the only correct "census" of farm animals published, and in that connection are of considerable



interest and value not only to this Department but to other State departments, and to associations and individuals interested in the breeding and raising of live stock, or engaged in any of the many branches of business closely related thereto.

In instances where unsatisfactory conditions of animals or premises are found by the local inspectors, the latter make recommendations for improvements and later visit the premises to ascertain if such have been carried out. It frequently happens that owners entirely fail to make the changes recommended, and in those instances the district veterinarians of the Department are directed to visit the premises in their respective districts and by every means possible to induce owners to bring sanitary conditions up to a reasonable state of perfection. In pursuance of this plan district veterinarians made 2,097 visits during the year, and the result in a majority of instances was full or partial correction of the unsatisfactory conditions noted by local inspectors.

A gross tabulation of annual reports of inspectors follows:—

Total number of herds of cattle inspected, . . . . .	30,155
Number of herds containing not over 5 dairy cows, . . . . .	22,135
Number of neat cattle inspected, . . . . .	230,191
Number of dairy cows inspected, . . . . .	150,593
Number of herds found clean and in good condition, . . . . .	29,048
Number of stables inspected, . . . . .	31,123
Number of stables properly drained, . . . . .	30,780
Number of stables well ventilated, . . . . .	30,597
Number of stables sufficiently lighted, . . . . .	30,302
Number of stables found clean, . . . . .	29,806
Number of stables in which improvements were recommended, . . . . .	976
Number of herds of swine inspected, . . . . .	17,076
Number of swine inspected, . . . . .	108,108
Number of herds of swine garbage-fed, . . . . .	3,547
Number of swine garbage-fed, . . . . .	55,652
Number of sheep inspected, . . . . .	17,906
Number of goats inspected, . . . . .	1,408

The annual inspection from which the above tabulation was made took place during the spring months of 1919, and at that time there was found a decrease in the total number of cattle in the State of 1,216 since the inspection made the previous year, a decrease of about one-half of 1 per cent. The present total is found to be only slightly below the average total for

the years 1901 to 1919. The number of dairy cows decreased during the year by 1,366, and the present total shows their number to be about 9,400 below the average number for the years mentioned.

The above statistics referring to total number of swine are not reliable as showing the actual conditions of the swine-raising industry, for the reason that the numbers increase or decrease rapidly on individual premises according as new litters are farrowed or mature animals are shipped to market. The record of the inspector may be made just before or just after one of these happenings and does not therefore reliably indicate the condition as to numbers. The statistics referring to number of herds are, however, a proper basis for deductions. These show that 4,193 more people engaged in swine raising during the year ending in the spring of 1919 than had so engaged the previous year.

The inspectors' records of the number of sheep found on farms show an increase during the year from 16,570 at the 1918 inspection to 17,906 in 1919. On account of the recent increasing interest in sheep raising the total number owned in the State will undoubtedly show an increase at the next inspection.

In connection with the above reference to reports of the inspectors of animals of the various towns and cities, attention may very properly be called to the value of the services of inspectors in other instances. By law they are obliged to carry out any orders given them by the Commissioner of Animal Industry, and it frequently becomes necessary to call upon them for active service in connection with outbreaks of contagious disease or with the arrival of animals shipped interstate. In this way they are a necessary part of our organization, and according as they are alert, conscientious and faithful they render valuable aid and assistance in the execution of our work as a whole.

Meetings of inspectors of animals were called at different points in the State as follows: Greenfield, October 28; Pittsfield, October 29; Springfield, October 30; Boston, November 5; Worcester, November 6; Middleborough, November 7.

At these meetings there was a total attendance of 188. Much benefit was derived from the discussions of matters of especial interest to the local inspectors, such as general live-stock con-

ditions, the prevalence of rabies in dogs, of tuberculosis in cattle, and regarding the duties of inspectors in unusual instances of various kinds. A question box was instituted at each meeting as a new feature, and this brought forth much additional discussion. Charts showing the Department's work in its various branches for a period of years were shown and explained in detail by Department officials.

#### REPORTS OF RENDERING COMPANIES.

Section 111 of chapter 75 of the Revised Laws, as amended by chapter 243 of the Acts of 1907, requires rendering companies to report to this Department every animal received by them which is found to be infected with a contagious disease, and the information thus furnished is of value in bringing to the attention of the Department occasional cases of these diseases which otherwise would not be known. A table of reports of rendering companies follows:—

RENDERING COMPANIES.	Number of Reports.	Number of Cases of Glanders.	Number of Cases of Tuberculosis.	Number of Cases of Glanders not previously reported.	Number of Cases of Tuberculosis not previously reported.
Ayer Rendering Company, . . . . .	3	-	3	-	-
Edwin G. Baker & Son, Providence, R. I.,	8	-	9	-	-
L. B. Darling Fertiliser Company, Pawtucket, R. I.	1	-	1	-	-
Saul Donais, Southbridge, . . . . .	1	1	-	-	-
William S. Higgins, Wilmington, . . . . .	4	-	4	-	-
Home Soap Company, Millbury, . . . . .	7	1	14	-	-
Lowell Rendering Company, . . . . .	7	-	10	-	-
Muller Brothers, Cambridge, . . . . .	3	4	-	-	-
New England Rendering Company, Brighton.	6	6	2	-	-
Parmenter & Polsey Fertiliser Company, Peabody.	1	1	-	-	-
N. Roy & Son, South Attleborough, . . . . .	4	1	3	-	1
N. Roy, Jr., Fall River, . . . . .	8	-	11	-	-
Springfield Rendering Company, . . . . .	1	1	-	-	-
N. Ward Company, Boston, . . . . .	5	9	-	1	-
Worcester Rendering Company, . . . . .	1	1	-	-	-
Totals, . . . . .	60	25	57	1	1

NOTE. — All the above cases are included in statistics occurring elsewhere in this report.

RECEIPTS OF LIVE STOCK AT THE STOCKYARDS IN BOSTON AND VICINITY FOR TWELVE MONTHS ENDING NOV. 30, 1919.

For several years, at the request of the United States Department of Commerce and Labor, a report of the receipts of all live stock at Boston has been sent to Washington each month. The following table shows the receipts by months for the past year: —

FOR MONTH OF —	Cattle.	Calves.	Sheep.	Swine.	Horses.
December, . . . . .	21,219	19,909	18,899	205,330	985
January, . . . . .	13,255	14,535	19,610	197,718	964
February, . . . . .	9,274	12,502	13,039	196,860	1,236
March, . . . . .	10,390	19,077	11,510	121,476	1,955
April, . . . . .	11,664	35,780	14,966	91,926	2,358
May, . . . . .	8,512	27,887	13,530	93,397	1,865
June, . . . . .	7,320	18,454	8,902	133,801	1,525
July, . . . . .	9,727	17,592	23,304	133,609	1,125
August, . . . . .	7,948	16,734	23,714	53,700	1,125
September, . . . . .	9,760	15,519	33,358	55,624	1,126
October, . . . . .	8,504	11,740	26,735	33,142	1,226
November, . . . . .	7,943	7,306	5,016	15,216	823
Totals, . . . . .	125,516	217,035	214,583	1,331,801	16,333

FINANCIAL STATEMENT.

Appropriation for the salary of the Commissioner, chapter 153, Special Acts of 1919, . . . . .	\$3,500 00
Expended during the year for the salary of the Commissioner, . . . . .	3,500 00
Appropriation for personal services of clerks and stenographers, chapter 153, Special Acts of 1919, . . . . .	\$8,000 00
Expended during the year for the following purposes:—	
Personal services of clerks and stenographers, . . . . .	\$7,045 25
Extra clerical and stenographic service, . . . . .	167 13
Total expenditure, . . . . .	\$7,212 38
Unexpended balance, . . . . .	787 62
	<hr/>
	\$8,000 00
Appropriation for services other than personal, including printing the annual report, traveling expenses of the Commissioner, and office supplies and equipment, chapter 153, Special Acts of 1919, . . . . .	\$4,400 00

Expended during the year for the following purposes:—	
Books and maps, . . . . .	\$72 35
Express and messenger service, . . . . .	240 56
Postage, . . . . .	730 72
Printing report, . . . . .	145 53
Other printing, . . . . .	1,126 73
Telephone and telegrams, . . . . .	643 52
Stationery and office supplies, . . . . .	724 04
Typewriter, . . . . .	96 75
Expenses of the Commissioner, . . . . .	515 45
Sundries, . . . . .	3 45
	<hr/>
Total expenditure, . . . . .	\$4,299 10
Unexpended balance, . . . . .	100 90
	<hr/>
	\$4,400 00

Appropriation for personal services of veterinarians and agents engaged in the work of extermination of contagious diseases among domestic animals, chapter 153, Special Acts of 1919, . . . . . \$47,000 00

Expended during the year for the following purposes:—	
Services of regular agents, . . . . .	\$33,874 81
Services of <i>per diem</i> agents, . . . . .	9,756 00
Labor hired, . . . . .	326 00
	<hr/>
Total expenditure, . . . . .	\$43,956 81
Unexpended balance, . . . . .	3,043 19
	<hr/>
	\$47,000 00

Appropriation for the traveling expenses of veterinarians and agents, chapter 153, Special Acts of 1919, . . . . . \$22,500 00

Expended during the year for the following purposes:—	
Traveling expenses of regular agents, . . . . .	\$15,634 53
Traveling expenses of <i>per diem</i> agents, . . . . .	5,881 29
	<hr/>
Total expenditure, . . . . .	\$21,015 82
Unexpended balance, . . . . .	1,484 18
	<hr/>
	\$22,500 00

Appropriation for reimbursement of owners of cattle and horses killed, travel, when allowed, of inspectors of animals, incidental expenses of killing and burial, quarantine and emergency services, and for laboratory and veterinary supplies and equipment, chapter 153, Special Acts of 1919, . . . . . \$55,000 00	
Brought forward from 1918 appropriation, . . . . .	29 24
Total amount appropriated, . . . . .	<hr/>
	\$55,029 24

Expended during the year for the following purposes:—	
932 head of cattle condemned and killed on account of tuberculosis in 1914, 1916, 1917, 1918, 1919, paid for in 1919, . . . . .	\$39,135 82
31 horses condemned and killed on account of glanders and farcy in 1918 and 1919, paid for in 1919, . . . . .	1,685 00
Supplies for veterinary inspectors, . . . . .	1,058 16
Laundry, . . . . .	523 58

Antiseptics, biologics and disinfectants, . . . . .	\$2,257 15	
Thermometers, needles, syringes, etc., . . . . .	1,393 50	
Ear-tags, punches, chains, etc., . . . . .	2,387 11	
Expenses of killing and burial, . . . . .	24 50	
Expenses of travel allowed inspectors of animals, . . . . .	594 63	
Quarantine expenses, . . . . .	162 18	
Rent of quarantine office, . . . . .	110 00	
Sundries, . . . . .	141 10	
		<hr/>
Total expenditure, . . . . .	\$49,472 73	
Unexpended balance, . . . . .	5,556 51	
		<hr/>
		\$55,029 24

The average price paid for condemned cattle for the year was \$37.83.

There has been received during the year from the sale of hides and carcasses of condemned animals \$736.20, and for the testing of cattle for non-resident owners \$2,271.75, a total amount of \$3,007.95.

Claims for 79 head of cattle condemned and killed as tuberculous during the year remain unsettled, to be paid for on proof of claims, the appraised value of which amounts to \$2,874.

Claims for 2 horses condemned and killed during the year because deemed to be affected with glanders remain unsettled, to be paid for on proof of claims, the allowance for which under the law will amount to \$100.

Respectfully submitted,

LESTER H. HOWARD,

*Commissioner.*

AUG 29 1920

